The Builder.

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ILLUSTRATIONS.

Oak Screen, Charterhouse, London
Section of Charterhouse Hall
Plan of Charterhouse Hall
Details of Woodwork
..... Measured and Drawn by Mr. A. S. Carter.

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The National Physical Laboratory.

FROM the Reports of the Executive Committee and the Director of the National Physical Laboratory it is evident that satisfactory progress is being made in every direction at that valuable institution. In the record of work performed during the year ending December 31, 1905, the items more particularly affecting our readers are those mentioned below.

Wind pressure research has been confined mainly to observations of the resultant wind pressure on two rectangular plates of 50 sq. ft. and 100 sq. ft. area respectively, the data so far available indicating that for the same wind velocity the mean intensity of pressure is the same for a surface of 50 sq. ft. as for one of 100 sq. ft. area. Owing to the abnormal quietude of the atmosphere last year only ten days were suitable for the conduct of experiments, but it is hoped that the research will be concluded this year. Investigations into the resistance of iron and steel to alternations of stress have been completed, and the Report on this subject is nearly ready for publication. Sufficient data have been obtained to determine the breaking range of stress for one million reversals of stress in each of the material tested. In the Optics division of the Physical Department research was carried out on behalf of the Institution of Gas Engineers into the relation between the candle-powers of the Pentane, Hefner, and Carcel standards of light used respectively in America, Germany, and Great Britain, and the investigation will be continued during the present year. The result of the comparisons ought to be of considerable value. Two investigations of great importance have been conducted in the Metrological division, the first being to determine, as far as possible, the difference in dimensions between shafts and bearings, and the tolerance on cylindrical machine work as found in actual practice, and the second a similar inquiry relating to screw threads. Much valuable work has been performed also in the Electrical and Metallurgical divisions, and in the Chemical Department.

The programme for the present year includes an investigation into the resistance of materials of construction to impact, as suggested in the discussion of the Sixth Report of the Alloys Research Committee at the Institution of Mechanical Engineers in 1904. A machine for the purposes of the research has been designed, and is now nearing completion. The wind pressure research will include tests upon models of a lattice girder and a roof, and it is hoped that sufficient data will be obtained to enable designers to predict the effect of the wind on open framework and roof structures. Further work may be undertaken with regard to the resistance of materials to alternating stress and to the properties of superheated steam. Various important points will receive attention in the Electricity Division of the Physics Department, including the further investigation of light standards; while the Thermometry Metrology, and Metallurgy divisions will be equally busy.

One very satisfactory announcement made in the Report is that the Government communicated their intention in December last to grant a sum of 5,000*l.* for buildings during the year, and to increase the annual grant. But a still more gratifying piece of news is that the Chancellor of the Exchequer has recently announced his intention of making the building grant for the year 10,000*l.* instead of 5,000*l.*, as at first contemplated. The Goldsmiths' Company have also made a donation of 1,000*l.* to the laboratory for application to some specific object. Owing to the increased Government grant various additions to the buildings will be made at the earliest possible moment. We may mention that the new electrical buildings now nearing completion have been designed to accommodate all the electro-technical work under one roof. The eastern block, for photometric work, covers a ground area of 100 ft. by 25 ft., and consists of two floors, with the battery-room above; the other two bays run east and west, with north roof lights, each having a ground area of 120 ft. by 25 ft. One of these is arranged for testing direct and alternating current instruments and machines, and the other is sub-divided into two portions—one for resistance work and the other for heavy test work. In addition to the two main bays there is a smaller space for office, workshop, and store accommodation. The whole block of buildings

covers the greater part of the site between the Engineering and Physics buildings, and when completed in June next will prove a most useful and necessary addition to the laboratory.

ELECTRICITY METERS.

THE manufacture of electricity meters is now happily an important branch of the electrical industry, and the great majority of the meters in every-day use are thoroughly trustworthy. For this satisfactory state of affairs we have to thank the somewhat rigorous rules of the Board of Trade and possibly the able way in which manufacturers advertised the defects, generally by implication, of their rivals' meters. An immense amount of skill and patience has been devoted to the invention and perfecting of electric meters; in most cases unfortunately with a very poor return to the inventor. Almost every electric phenomenon has been utilised by the inventor as a principle on which to devise a meter. The rotation of mercury when placed on a magnet and traversed by a current does not strike one as a very suitable method of moving the counting mechanism of a meter, and yet tens of thousands of meters constructed on this principle are at present in operation. Some inventors also have managed to avoid the apparent necessity of a mechanism with index fingers actuated by toothed wheels. In the Schattner meter the diminution in weight of a plate of copper immersed in copper sulphate is measured, and in the Bastian meter the fall in level due to electrolysis of acidulated water contained in a graduated glass tube measures the consumption of the electric current.

Perhaps in no other field of industrial research has the labour of inventors so overlapped as in the devising of electricity meters. For this reason we welcome the important treatise on the subject by Mr. H. G. Solomon,* which has recently been published. It shows clearly what has already been done on the subject, and the youthful electrician will be able to find out for himself whether the device he is perfecting is original, and whether its performance is likely to rival in accuracy the many types of successful meters described in this volume.

To the non-technical reader and even to the electrician—if he be not already an expert in meters—there is much that will be quite unintelligible without hard thinking, and possibly a good deal of reference to mathematical works to relearn forgotten symbols and theorems. He will, however, be well repaid for the trouble, and it is no small satisfaction to the engineer to be able to see for himself the reason why meters must be connected in certain ways with polyphase networks rather than to take it on authority. The author is evidently thoroughly familiar with the German literature on the subject, but occasionally he follows German methods a little too closely. For instance, on p. 124, there are many neat trigonometrical theorems, but the whole page is quite unnecessary. The two wattmeter method has been already proved on p. 121; it is, therefore, quite unnecessary to prove it again. The mathematical equations, however, given by the author are most important. As a rule they are omitted from electrical works written for the "practical engineer," although, judging by experience, the meaning of these equations is what the practical engineer needs and wants to know.

The author divides meters into three main classes—Continuous Current, Induction, and Tariff Meters. The first chapter gives a useful introduction to the subject. Perhaps it would have been better to make the explanations fuller. On p. 10, for instance, the reader naturally supposes that the voltage drop in the meter is a constant at all loads, and that the equations given apply to alternating current meters. He would also suppose that the pressure between the supply mains was always kept equal to the "declared pressure." As a matter of fact it is often above it, and so, notwithstanding the pressure drop in his meter, his lamps will be sometimes giving out more than their normal light. On the same page also, instead of saying "Assuming as low a shunt loss as 1 watt per 200 volts," it would be better to say, "Assuming that the shunt loss for a 200 volt meter is 1 watt."

The chapters describing the mechanical features in meter designs and on meter testing are excellent, and will prove most useful. The author has obviously been at great pains to collect accurate data about modern electric meters, and the numerous diagrams are clear and instructive. We can heartily recommend the book to meter manufacturers, central station, and consulting engineers, and all who require a thorough knowledge of the subject.

* "Electricity Meters." By H. G. Solomon, A.M.I.E.E. London: C. Griffin & Co. 1906.

CHARTERHOUSE.

AS our illustrations this week consist entirely of measured drawings of Charterhouse Hall, a summary of the history of this ancient Institution, and the manner in which it came into being, may be considered to be not out of place under the circumstances.

Sutton's Hospital of King James in Charterhouse—"a master-piece," says Fuller, "of Protestant English charity"—has its origin in the benefactions of a Bishop of London and a Flemish retainer of Philippa the bride of Edward III. When the Black Death reached London Bishop Ralph de Stratford bought, 1348, some three acres, "No Man's Land," or Pardon Churchyard, then lying in St. Sepulchre parish between the present Sutton-street and Clerkenwell-road (Wilderness-row), and enclosing it with a wall dedicated it for burial of those stricken by the pestilence. Sir Walter de Manny, K.G., acquired from St. Bartholomew's Hospital the adjoining Spital Croft to the south, about 13 acres, for the same purpose. On the testimony of an inscribed stone cross he had seen on the spot Stow avers that more than 50,000 were buried there. As the plague abated Michael de Northburgh, Bishop of London, 1354-71, entrusted Sir Walter with the founding of a religious house on the ground, bequeathing 2,000*l.* to that intent. In the wall of the Registrar's house were discovered, 1894, coloured portions of a tomb with a shield charged with de Manny's coat-arms. The wealthy Carthusian convent of the House of the Salutation of the Mother of God consisted of a prior, twenty-three monks, and lay brethren, who at the Suppression were treated with the utmost cruelty; some of them with Prior Houghton suffered at Tyburn in 1535-6. Having served for a short term, like the adjacent Priory of St. John of Jerusalem, for the King's equipments for the chase the buildings were granted in 1542 to Thomas Hall and John Brydges for their joint lives. The King then bestowed them upon his lord chancellor, Sir Thomas Audley, Lord Audley of Walden, who in April, 1555, sold Charterhouse to Edward, Lord North of Kirtling, co. Cambridge, who entertained Queen Elizabeth in November 23-8, 1558, on her way from Hatfield, and rebuilt the gate-house in Charterhouse-square. North sold it for 2,500*l.* to John Dudley, Duke of Northumberland, on whose attainder it reverted to him by grant of the Crown. By deeds of May 31 and June 7, 1565, Roger, second Lord North, conveyed the property for 2,820*l.* to Thomas, fourth Duke of Norfolk, and after his conviction and attainder, 1572, Howard House was returned by Elizabeth to his second son Thomas, Baron Walden, whom on May 4, 1603, James I. advanced Earl of Suffolk whilst sojourning there on his entry into London. The Earl of Suffolk, busy with the building of Audley End, alienated Howard House on May 9, 1611, to Thomas Sutton the opulent coal-miner and Master-General of the Ordnance in the North, who died on December 12—ever since commemorated as Founder's Day—of that same year. In that brief interval he made dispositions for the founding of a hospital for eighty brethren, a number since reduced, and a free school for forty poor children or scholars.

We there have a unique example in London of a nobleman's house in the XVIth century, embracing the typical plan of St. Bruno's La Grande Chartreuse near Grenoble. Edward North pulled down the chapter-house and laundry to the east of the chapel, as well as the twenty-three cells—each consisting of a little two-storied house with pentises and garden, as we see at Mount Grace—about Great Cloister, now Upper Green, the boys' playground. Some traces yet remain in the cloister wall of a cell doorway and of the hatches through which the monks took in their food. Beyond lay north-west, some offices, the kitchen garden, and the two old graveyards; and north-east, the gardens overlooked from the terrace-walk on the east cloister, the Mount, and the Wilderness. The Wilderness, latterly covered with Foresters' Hall and other buildings, gave a name to Wilderness-row. Along the north-east side of Little Cloister wherein the stone-work has been covered with brick, stands the Guesten Hall; to the south-west is the small oblong Wash-house Court of or shortly before Prior Houghton's day, bearing evidences of much structural alteration. That corner of the convent constituted the lay-brethren's and the strangers' or visitors' quarters. In the wall of squared flint and stone next the gate-house are the remains of "Egipte the fleysche kychyne"

as plotted on a little-known XIVth century plan showing the windmill, brew-house well, old chapel (to the north), twenty-three cells, etc., drawn on the four skins of the parchment roll of a survey of the spring-heads, wells, and conduits belonging to St. John of Clerkenwell and the Charterhouse. The initials of the Duke of Norfolk with date, "T. N. 1571," are repeated in the carving of the Hall, wherein the brethren, familiarly known as "Codds," dine together; Sutton added the quasi-clearstory and new roof, as well as the music-gallery and screen, with some panelling, and the chimney-piece with a side gallery above. The fine late XVIth century staircase (see Mr. R. W. Paul's drawings in the *Builder*, May 22, 1886) ascends to the Presence Chamber or (old) Governors'-room, restored in 1858, which stands over the Fratry, and has a mantelpiece and ceiling bearing the Howard coat-arms, and some contemporary tapestry. In the north aisle of the chapel is Sutton's tomb, with his effigy; Nicholas Stone's MS. account-book in the Soane Museum contains an entry:—

1615. Mr. Sutton's Tombe in the Charterhouse including Mr. Lawes mont, 400*l*.

The chapel has south and east walls of the choir of an early date, the groined ante-chapel and evidence, or muniment, chamber above are of about 1509-10.

Preacher's and Pensioners' courts are by Edward Blore, who in 1825 rebuilt "Schoolmaster's House"; on the south side of Schoolmaster's-court is "Gownboys'," by P. C. Hardwick, who also modernised the old school and the boys' hall. The "Grey Friars" and "Smiffles" of Thackeray migrated to Godalming in 1872. The Merchant Taylors Company paid 90,000*l*. for 5½ acres of ground and the school buildings, and in 1874 removed their school from Suffolk-lane, E.C., to the new buildings built by E. l'Anson for 500 boys on the western side of Upper Green; l'Anson converted "Gownboys" and "Schoolmaster's House" for class-rooms, adding a library and a lecture theatre to the latter. On June 11, 1898, we illustrated Mr. W. Hilton's Nash's designs for the headmaster's house and dinner-rooms in Rutland-place; in our columns of December 19, 1885, we printed an interesting letter from R. Herbert Carpenter, an old Carthusian, recounting his reminiscences of the school and other buildings as in his time, 1851-7; a view of the Charterhouse by Gainsborough is preserved in the Foundling Hospital.

NOTES.

The Report of the Registration Committee.

ACCORDING to the Report and remarks published in the last issue of the *Journal* of the Institute of Architects, and which we reprint on another page, the proceedings of the Registration Committee have resulted, not in the adoption of the exceedingly undesirable system of wholesale Registration, reducing architecture to the level of a business, but in what appears to us to be the best result which could possibly have arisen out of the recent disputations, viz.—the recommendation to obtain a legal status and a power of granting diplomas by the Institute to qualified practitioners in architecture, who after a certain period must have passed through a definite course of architectural education "in a recognised school." We do not quite understand whether the latter sentence is intended to nullify the system of office apprenticeship, which in our opinion ought to be taken as constituting an education (if properly carried out on the part of both master and pupil); but in general the result of the Report would be to put the Institute of Architects in a stronger position before the public than it has hitherto had, and to secure whatever benefits, real or imaginary, were to be derived from Registration, without its concomitant evils. We must not be understood to say that we think even this movement to define and limit the art of architecture is in itself either desirable or necessary—the example of the engineering profession proves that it is not so; but it will have the indirect result of adding to the power and dignity of the Institute, and will practically supply the demands made by the Registrationist agitators in the least harmful manner; so that we hope it will be accepted as the ending of an acrimonious piece of polemics which has done little to advance the art of architecture. One thing the Registrationists may be sure of: that however they might obtain a majority of mere numbers, Parliament would never grant an Act in the face of the expressed opposition of a minority who would include nearly all the leading men in the Profession. We must add, however, that we object strongly to the proposal to change the title of "Institute" to "College," for which we can see no possible reason, and which is simply throwing away the prestige of seventy years attached to the title under which the Charter was originally granted.

The New Government Offices.

WE presume that the question and answer in Parliament on Tuesday evening, in regard to the towers in the late Mr. Brydon's design for the Great George-street block of Government Offices, refers to the towers with cupolas which are seen at the back in our view of the design published in the *Builder* of March 25, 1899. It will be seen from that view that these are the most important exterior architectural features of the building, and that, as far as can be judged by that small scale perspective, they are features of very fine design and outline. It is now proposed to discontinue them for the present, and in any case to reduce their height, not as the First Commissioner assured the House, on any ground of economy, but because they would obstruct the light for the India and Local Government Board Offices on the north side of Charles-street "so as to render their already limited accommodation practically useless." Considerations of light are important, of course; but is not that statement a little exaggerated? At all events, if this alteration is to be carried out, we should like to know who is to re-design poor Brydon's towers. And then there are the corresponding towers towards Great George-street, where no question of light arises; are they also to be docked to agree with the others? It seems to us that Brydon's design is in great danger of being maltreated, and deprived of one of its finest features. When this kind of conscientious interference with the design of a deceased architect is once begun there is no knowing where it will stop; and we do not see that any absolute proof of its necessity has been given.

The Workmen's Compensation Act.

THE New Workmen's Compensation Bill was introduced into the House of Commons on Monday last and read a first time, after some speeches which might well have been reserved for the second reading. At present it is not possible to do more than indicate a few leading features of the new measure, and detailed examination of it must be postponed till the Bill is circulated. It is a consolidation as well as an enacting Bill. In other words, it will be a limited code of law on the subject of compensation. It includes more workers under the system of compensation, but it excludes workmen of employers of less than five workmen, with some exceptions. Small builders and contractors will apparently, therefore, be excluded. It is, on the whole, a further step towards a complete system of workmen's compensation, and was admitted by the Home Secretary to be a measure which hereafter, as has happened to its predecessors, would be enlarged. The system of insuring risks is now growing so largely that in time there will, no doubt, be a complete and universal system of compensation, the payment of which will fall on the insurance companies.

British Forestry.

IN view of the rapidly-diminishing sources of the world's timber supply and the corresponding increase of consumption, much attention has been devoted to the conservation of forests and woodlands by the Governments of the United States, Canada, France, Germany, Russia, Sweden, and other countries, as well as by private individuals interested in the timber industry. We have alluded more than once to the urgent necessity for similar action in the United Kingdom, and it is satisfactory that the question is at last about to be taken up, in conjunction with other subjects, by a Royal Commission. But inquiry by a body of the kind is notoriously extremely previous to beneficial action, and in this particular case we are merely about to inquire, while other countries are acting. As Sir Herbert Maxwell pointed out last week in his lecture at the Carpenters' Hall, Germany is sparing her own forests, knowing that in the future the price of timber must be enormously increased, and in that country the State forests are already returning substantial profits. It is quite a mistake to think that climatic and other conditions in the British Isles are unfavourable to forestry enterprise, and there is much to be said for the scheme outlined by Sir Herbert Maxwell for forestry under Government direction. It certainly seems ridiculous that the 2,700,000 acres of our woodlands in private hands should be a source of expense instead of yielding profits to the owners, with concurrent advantage to the country.

Niagara Falls.

A FEW days ago the Commissioners for the Queen Victoria Falls Park reported that the present abstraction of some

17,5000 cubic feet of water per second has made no appreciable difference in the aspect of the Niagara Falls, but they very reasonably expressed the opinion that it would be wise to take steps with a view to cancelling charters for water power in respect of which no works have been commenced. At present the existing charters represent an abstraction of 60,900 cubic feet per second, or more than one-fourth the normal flow over the Falls. Americans have been the chief aggressors in this matter, even on the Canadian side, where the only companies with intakes above the Falls belong to the United States. The necessity for preventing further injury is fully recognised by the United States and Canadian Governments, and it is probable that the deliberations of the International Commission will ultimately result in legislation of suitable character. So far, there appears to be a little difference of opinion between the American and Canadian members of the Commission, although fortunately both sides are agreed as to the desirability of limiting existing powers, and of adopting regulations to prevent further depletion of the water, and to maintain the beauty of the Falls.

The Factory Act.

THE restrictive legislation our manufacturers are now subject to is well illustrated by the case of Rogers *v.* Barlow & Sons. On an information preferred by an Inspector of Factories, the respondents, cotton-weavers, were proceeded against for employing a child during mealtimes. The machinery had been stopped for the day at 5.30 p.m., and at 5.34 the child in question was wiping the oil from the spindles, a necessary operation when the machinery is stopped. The persons in charge after that summoned the employees to leave, and it was proved that this was the practice within five or ten minutes of the stopping of the machinery. The magistrates dismissed the information on the ground that the respondent had used every possible means to carry out the intention of the Act, but the Divisional Court have reversed this decision, and remitted the case to the magistrates to convict. It was urged for the respondents that even if a technical offence had been committed, it was too trivial for judicial notice. This is how it certainly strikes the lay mind, and a lay-man would like to know when the legal maxim *de minimis non curat lex* comes into operation. The case, moreover, seems distinguishable from that cited to the Court, Prior *v.* Staithwaite Spinning Company, because there the child was found working in his dinner-hour, whereas here work was done for the day, and the detention from the boys' tea amounted to four minutes. How are business men to carry on business with such legislation to hamper them, administered in a microscopic spirit?

Liabilities in Connexion with Underground Undertakings.

THE complications connected with what we may term "underground London" are well illustrated by the case of London Hydraulic Power Company *v.* St. James and Pall Mall Electric Light Company, Ltd. The plaintiffs, acting under statutory powers, have a main running 5 ft. below the ground in Piccadilly, laid in 1888. The defendants, acting under Provisional Order granted by the Board of Trade under the Electric Lighting Act, 1882, had in connexion with their electric plant constructed an inspection-chamber, and one side of the brickwork rested on the plaintiffs' main. This inspection-chamber was constructed in 1889 without the plaintiffs' knowledge. In July last the main burst and the plaintiffs, alleging this was caused by the defendants' manhole, were suing the defendants for the expenses of restoring the damage and the loss of water, and they further required a declaration that the defendants were liable to repay the plaintiffs any damages which the latter might be compelled to pay to other persons owing to the bursting of the main. The defendants, on the other hand, counterclaimed for damage done by the water to their plant. The substantial allegation on the part of the plaintiffs was that the damage, which was a transverse split, was caused by the vibration of the traffic over the manhole, which was communicated to the main; the defendants, however, alleged that the damage was due to subsidence. The evidence was very conflicting, but the defendants' witnesses were of opinion the fracture was not caused by the vibration; whilst the plaintiffs' witnesses could not say that subsidence was not a possible cause, and in the result the learned judge held that the plaintiffs had failed to prove their case that the defendants had become liable for a nuisance under sect. 17 of the Electric Lighting Act, whilst on the authority of the case Midwood *v.* Mayor, etc., of Manchester, a case we carefully considered in a Note, July 22, 1905, he held that the defendants could recover on the counterclaim as for a nuisance, the damage caused to their plant by the bursting of the water main.

Payment of Wages and the Truck Act.

EMPLOYERS should note the decision of the House of Lords in Williams and others *v.* North's Navigation Collieries (1889), Ltd., on the Truck Act of 1831. Some workmen having been fined in proceedings under the Employers and Workmen Act, 1875, for absenting themselves from work in breach of contract, and an order having been made against them by the magistrates for three fortnightly payments to the employers of 10s., the employers paid the men their wages less the 10s. due to themselves. The House of Lords held that this deduction is illegal, as being contrary to the provisions of the Truck Act. The amount due to the workmen must be paid to them in the current coin of the realm without deduction. The judgment decides that the right of set-off mentioned in the Act is limited to a set-off in an action. It is curious to find such an apparently simple point coming to the House of Lords for decision some seventy-five years after the coming into operation of a statute, but that the statute does not admit of easy interpretation is proved by the fact that the Court of Appeal took an opposite view.

Continuous Columns.

IF when determining the proportions of a column to be used in a building of several stories the total length be taken into account without any allowance for the lateral support given by intermediate portions of the structure, the strength of the column will obviously be greater than that of a short column of one-story length proportioned by the formula applied to the first considered column. In other words, the effect of "continuous-column action" is disregarded. This is by no means necessary, and in the case of an axially-loaded column fixed at successive floor levels in a secure manner the same allowance might be made for increased resistance as for that of a continuous beam in comparison with a non-continuous beam. In practice, however, the lateral support afforded by the members connected with a column is not of particularly rigid character, and such members generally tend to cause non-axial loading. Consequently, if allowance be made for continuous-column action, there must be suitable allowance on the other hand for eccentric loading wherever that is caused, in addition to proper consideration for accidental eccentricity due to variations in the quality of the material or to defects of workmanship. To arrive at an approximately true idea of the resistance afforded by a continuous column it would also be necessary to take into account the relative lengths in all stories of the building. For example, a 20 ft. free length of a continuous column in any given story will be stronger if the lengths in the stories above and below measure 14 ft. than if they were 20 ft. long. At present no convenient formulæ exist for solution of the problem here indicated, although a theory has recently been propounded by Mr. E. F. Jonson in a paper read before the American Society of Civil Engineers. This communication fully deserves the attention of architects and structural engineers, and its value to general practitioners would be much increased if the author had concluded with a set of working formulæ in a form convenient for every-day use.

The Electrical Equipment of Collieries.

THE useful paper read by Mr. C. P. Sparks to the Institution of Electrical Engineers last week, on the "Electrical Equipment of the Aberdare Collieries," proves that electricity is particularly adapted for lighting and power purposes in collieries. The group of mines supplied with power is situated about twenty miles north-west of Cardiff, and several of them had isolated direct-current plants before it was decided to build a central generating station for them all. The district served is eight square miles in area, and the power is transmitted by overhead transmission lines at 3,000 volts. The wires are as a rule supported on wooden poles, but where the stress is specially heavy lattice steel poles are used. To prevent any one climbing the poles they have barbed wires spiralled round them, and at 10 ft. from the ground there is a ring fitted with spikes. The overhead system extends for nearly nine miles, and over thirty miles of wire have already been erected. Special care has been taken to prevent any accidental contact from live wires. Wherever existing wires are crossed or in the neighbourhood of the collieries where there is traffic, guard-netting is

used. Steel catchers are also fitted to each pole to ensure that a broken wire will be immediately earthed. By grouping the mines together a great economy in the working costs has been secured, the cost per unit consumed being about one-third of a penny. It is satisfactory to notice that the special advantages of three-phase current for colliery work are being appreciated by engineers. The three-core cables used in the mines are very substantial and are duplicated. They are almost absolutely safe, being covered with a Board of Trade "earth shield" of copper, a thick lead sheath, and a heavy armouring of galvanised steel wires over the lead. We are sorry, however, that overhead wires are used. We quite see that it would have been prohibitive to use three-core cable for the transmission lines as expensive as that used in the mines. We think that at the comparatively speaking low voltage used cable manufacturers could easily make a cheap type of three-core cable if a demand arose for it. The Board of Trade regulations might easily be relaxed with advantage for underground transmission wires in country districts.

The Starting of Electric Motors.

IN order to start the electric motors which are used in heavy mechanical work it is necessary to employ elaborate starting devices. These devices are often a source of trouble even in the hands of skilled attendants, and hence many inventors have tried with more or less success to make them entirely automatic. Professor Steinmetz, one of the best-known American electricians, has recently perfected an electrical device which entirely surmounts all the mechanical difficulties which have to be overcome in making an automatic starter. He has discovered a material—apparently either magnetite or a mixture of chromite of iron and magnetite—which gradually becomes a good conductor when heated by the passage of an electric current. The material is formed in rods, and is mechanically strong even at a red heat. When the switch is closed the magnetite rod allows only a very small current to pass owing to its high initial resistance. As this current gradually heats the rod its resistivity gets less, and so the current gradually rises with the temperature. When it is almost red hot it offers practically no resistance to the passage of the current. It therefore acts electrically in exactly the same way as the usual mechanical starting device of a motor acts as the attendant gradually moves the lever over the rubbing contact pieces. This property of magnetite can also be usefully employed in the starting of single and polyphase induction motors. Professor Steinmetz places magnetite washers between the copper bars and the end rings in the usual "squirrel-cage" armature. These present excessive rushes of current in the armature at the start, and at the same time very considerably increase the starting torque. When the motor stops the washers cool almost immediately, as they are in contact with a large metal ring which has considerable radiating surface. It can, therefore, be started again almost immediately without risk. As there is an excellent prospect of power being obtained in London for motive purposes at very cheap rates in the immediate future, it is highly probable that large motors will be started by unskilled attendants, and so purely automatic starting devices of the Steinmetz type will be most useful.

Architects and Timber Specifications.

WE have received in a pamphlet form an article* on this subject, reprinted from the *Timber News and Sawmill Engineer*. The writer quotes, "from architects' specifications of recent date," certain clauses relating to the quality of Scandinavian and Russian timber, and points out that they are in many respects unreasonable or even impracticable. There can be no doubt that the timber clauses still used by some architects and surveyors are hopelessly out of date, and betray ignorance of modern conditions. Some of the ports from which the best timber was shipped thirty or forty years ago have now lost their pre-eminence, and from many new ports, which tap virgin forests, better and larger scantlings can be obtained. The port of shipment is, however, of very little moment, and may indeed be in a different country from the forest where the timber was grown. The writer of this note, when inspecting one of the sawmills near Sundsvall (a Swedish port), saw piles of yellow (red) deal which had been grown in Finland, but which would be shipped to our own country from Sundsvall. Then, again, we may point out that there is not any uniformity in the classification adopted by the various shippers. In some cases the timber may be shipped as "unassorted," while in others it may be sorted into as many as six different qualities. What is required in a specification is a clear definition of quality, and the clauses suggested by the writer of the pamphlet meet this requirement fairly and reasonably. The pamphlet is temperately written, and cannot fail to be of use in reducing or removing one source of friction between architects and builders. Perhaps the writer of it may be induced to issue a second article dealing with American pines and spruce and with hardwoods.

Stanley Abbey.

TWO MILES to the south-east of Chippenham was the Cistercian Abbey of Stanley colonised about 1154 by monks sent from Quarre in the Isle of Wight. The site, which belongs to the Marquis of Lansdowne, is an open field, and the buildings are indicated by mounds of earth in the middle of which is the level square of the cloister. The river runs on the north side, and part has been deflected by a straight ditch, which marks the drain of the Abbey. With the permission and kind loan of men from the owner, Mr. Harold Brakspear, F.S.A., of Corsham, has been able to make some excavations on the site. These were begun on the line of the eastern range, which from the church was over 200 ft. in length. The chapter-house is only 27 ft. wide, but was divided by two rows of marble columns, one of which was found as it fell and was a monolith 8½ in. in diameter and 6 ft. 2 in. long. There was also some of the tile pavement and a coffin found *in situ*. Northward from the chapter-house was the dortor sub-vault, 27 ft. wide, divided into at least twelve bays by a row of octagonal columns down the middle, one of which, owing to being bedded in a cross wall, remains to its full height. Nearly the whole of the outer walls, so far as at present traced, have been entirely removed, and, this being the case, it is remarkable that the centre of the buildings remain as they fell. Work has now been started on the church, which has revealed large patches of the original tile paving, and it is hoped that in time the whole abbey may be systematically explored, and so add another apparently lost plan to those of Cistercian Abbeys in this country.

* Published by Alfred Haworth & Co.

Turner's Drawings.

IT is satisfactory to find by the Report of the Trustees of the National Gallery that there is to be a chronological and descriptive catalogue made of the Turner drawings in the possession of the Trustees. It seems, however, that a private individual, Mr. A. J. Finberg, was the originator of this plan, for after, on his own initiative, a careful examination had been made of the many drawings possessed by the Trustees, it was decided by them to entrust to Mr. Finberg the task of undertaking the above work. Mr. Finberg has for a number of years given much time, thought, and labour to the study of Turner's drawings, and it is to the credit of the Trustees that they have taken advantage of a capable worker for this special purpose when he—providentially as it were—turns up. It is to be hoped that no over-enthusiasm will cause Mr. Finberg to state doubtful dates or conclusions, but at any rate we congratulate him on so satisfactory a conclusion to his previous studies, and the Trustees on seizing their opportunity.

Water-colours by Mr. Sutton Palmer.

THE three first numbered drawings in the collection of Mr. Sutton Palmer's water-colour drawings of Surrey subjects, at the Leicester Galleries, are well placed to attract the visitor, for they are all beautiful—"Twilight, Wotton" (1), "A Slope of Bluebells" (2), and "The Wey—near Ripley" (3)—the first-named in particular of exquisite beauty and finish, yet not over finished. As we go on we come on other beautiful drawings, but we realise that this accomplished water-colour artist has never yet settled on his style. "The Silent Pool" (12), one of the larger works, is what we call a scenic drawing—over-finished and rather like a stage effect; whereas "Frensham Common" and "The Great Pond, Frensham" (10 and 15) are in a far better and broader water-colour style, and No. 12 hardly seems to be the work of the same artist. We find a good many other beautiful drawings, and then in "Flanchford Mill" (45) we suddenly come across a mere piece of commonplace, and in "Spring Time" (56) we are reminded of Birket Foster. Among the best of those which represent the best side of the artist are the panoramic view of "The Vale of Albury" (62); "The Cloud" (30); "The Last Glow" (37); "Shere Heath" (42), which shows a fine sky; "From the Rim of the Punchbowl

Hindhead" (50); and "A Gravel Pit" (70). At his best Mr. Palmer is a really fine artist; it is curious that with these capabilities he should be content sometimes to relapse into the pretty commonplaces of water-colour art.

Messrs. Dickinson's Gallery.

AT this Gallery in Bond-street there is on view a fine collection of etchings by Mr. Cameron, Mr. Alfred East, Mr. W. Monk, and other artists in etching. In the upstairs Gallery Mr. Ernest W. Haslehurst exhibits his collection of water-colours illustrating "The Thames—from Source to Sea," which are apparently being reproduced in colour to form an illustrative volume of Thames pictures. Their style of execution is well suited for colour reproduction, and has perhaps been dictated by this consideration; but among them are some which are very successful as water-colours — "Early Morning, Upper Thames" (23), "Cliveden Woods" (26), "Looking Southward to the Nore" (31), and others.

THE EXHIBITION OF THE ANCIENT ART OF THE MARCHES AT MACERATA.

I MENTIONED in my notice of the exhibition of ancient Abruzzese art at Chieti (*Builder*, December 23, 1905, p. 667) that a similar exhibition had been held at Macerata during the latter part of last summer, in which specimens of the art of the Marches—the district includes the provinces of Pesaro and Urbino, Ancona, Macerata, and Ascoli Piceno—were for the first time brought together.

The elements of which the exhibition was composed differed considerably from those which gave its main importance to that of Chieti; and, unlike the latter, it was associated with a modern industrial exhibition,* of which it only formed a section. Goldsmiths' work was far less prominent, and majolica was almost entirely absent—rather from lack of space, perhaps, than from any other reason, considering the celebrity which the productions of Urbino justly enjoy; though from an artistic point of view they might more correctly, it is true, be considered to belong to Umbria than the Marches. Pictures, however, occupied the predominant portion of the space, in strong contradistinction to what was the case at Chieti—and, indeed, what was seen of the pictorial art of the Marches was something of a revelation, so that it may be well to devote attention in the main to this branch of the exhibition.

The first room was devoted to works of minor importance, but the second and third formed the centre of interest, as in them the progress of the painter's art was illustrated step by step.† Though the condition of some of the pictures was not very good, they had at least not suffered from restoration.

The first stage was marked by some frescoes, transferred from the refectory of the Augustinian monks at Fabriano, and belonging to the municipality of that town. They date from the XIIIth century, and are almost "Byzantine" in style, with stiff, conventional figures and faces, and decorations and architecture in the backgrounds which recall those of slightly earlier mosaics, the latter revealing as yet no traces of Gothic, and being, it would seem, purely traditional.

The next step came with the works of Allegretto Nucci in the following century—in the usual early Umbrian style, still somewhat wooden, but making an attempt towards emancipation. Allegretto was the master of Gentile da Fabriano (1370-1428), no examples of whose work were exhibited. Progress was, however, somewhat gradual, and, in a large picture by Andrea da Bologna, from Fermo, painted in 1369, we find him simply copying Nucci's work of forty years earlier. In the XVth century, however, the art of the Marches begins to develop on independent and interesting lines.

A Madonna in tempera by an unknown master, from Matelica, though pleasing, still shows much of the traditional restraint, but Antonio da Fabriano, in a *tavola* from Genga, painted on both sides, shows decided traces of Flemish influence, though, in his Crucifixion, from Matelica (1452), and his Death of the Virgin, from Fabriano, he is less progressive. Lorenzo Saimbeni, of San Severino, whose works occupied the beginning of Room III., still clung to the old style. Lorenzo di Maestro Alessandro da San Severino marks a decided advance, and his works have quite an individuality of their own. There is much fineness and delicacy in the rendering of the details, though some of his works show a little stiffness (*e.g.*, an otherwise beautiful Madonna, from the Collegiata at Pausula, bearing the date 1481); but the Marriage of S. Catherine, from Matelica, which belongs to the Confraternita di S. Angelo of that city, is an even more successful work, soft in colouring, and pleasing in expression, and of a style distinct from contemporary Umbrian work.

A contemporary of his was Alvise Vivarini (1464-1503), to whom are doubtfully attributed some figures of saints in richly-carved frames, from the cathedral at Pausula.

Carlo Crivelli, the Venetian (*ca.*1430-1494), though he was active in the Marches, is not well represented—a small Madonna from his hand, in the gallery at Ancona and a large picture in several compartments in the cathedral at Ascoli (1473) were considered too precious for transportation—but there are some very good specimens of the work of his brother, Vittore (about 1485), among them a Madonna adoring the Child dressed in a splendid brocade robe, with winged angels' heads above her and a kneeling cherub at each side behind her, playing a violin and mandoline respectively, from S. Francesco at Sarnano; a Madonna and Child, with a saint in a separate compartment on each side, and the Crucifixion in the central compartment above, from Monte San Martino, bearing the date 1490; and several works from Ripatransone. Other contemporary painters, such as Pietro Alemanni and Stefano Folchetti of S. Ginesio, were less successful; but Cola d'Amatrice, the architect of the handsome façade of S. Bernardino at Aquila, also produced some good pictures. His style varied considerably; at first he copied the Crivellis, then developed a style of his own, while, in some of his works, the influence of Michelangelo may be clearly traced.

A few isolated works of Umbrian masters—Giovanni Santi, Timoteo Vite, and Raphael himself (the predella of a Madonna by Perugino, from S. Maria Nuova at Fano, belonging to the period when he was still under the influence of Perugino), came next, and the last few pictures in the room were works by Vincenzo Pagani (*fl.*1529), which show the influence of Umbrian masters. The pictures in the later rooms, though belonging to collections in the Marches, were not the work of local artists, except for several Madonnas by Sassoferrato (G. B. Salvi, 1605-1685), and included no works of first-rate importance, and belonged, for the most part, to the XVIIth and XVIIIth centuries. With the section of modern art I do not propose to deal.

The room devoted to sacred art contained some fine specimens of vestments, especially a part of the cope of Gregory XII., who died at Recanati in 1417, and many vestments from the cathedral at Ancona; there was also some good church plate, though neither so fine nor so extensive an exhibition of it as that at Chieti. Two fine processional crosses from Visso, of the School of Nicola di Guardiagreley, may be mentioned, and also some reliquaries given to the city of Sassoferrato by Niccolo Perotti, the learned author of the *Cornucopiæ*,* in 1473, and another given by Sixtus V. to Montalto, his native city, in coloured enamel (French work?) in high relief. The objects suffered, however, from lack of space.

The prehistoric antiquities of the Marches were fairly well represented; the museum of Ascoli sent a selection of its finest objects, and various private exhibitors also contributed—two enormous bronze sacerdotal *fibulæ* from Sirolo, about 2 ft. long, from which hung a large block of amber, were especially noticeable. The Roman antiquities were of less importance. There was also a large collection of statutes, deeds, etc., from the archives, and a room was devoted to works written or printed in the local dialect.

The exhibition was, on the whole, a considerable surprise, especially as regarded the development of pictorial art in the Marches; and its promoters deserve high praise for the energy they displayed. It was unfortunate, however, that no adequate catalogue was to be had during the exhibition. T. A.

* The good work done by the technical schools in drawing, woodcarving, etc., is worth mentioning.

† The Ministry of Public Instruction has, as in the case of the Chieti Exhibition, photographed all the more important objects.

* A Latin glossary, the first edition of which was published by Aldus in 1499.

A NEW MOVE IN THE ARCHITECTURAL PROFESSION.

A SPECIAL general meeting of the Royal Institute of British Architects will be held on Tuesday, April 3, at 8 o'clock p.m., to receive formally the Draft Registration Bill and the Report and recommendations of the Registration Committee adopted at a meeting on March 20, when it was resolved to recommend the Royal Institute to adopt the scheme outlined in the Report instead of the Draft Registration Bill already published. The following resolutions are to be proposed from the chair:—(1) That the Report and recommendations of the Registration Committee, dated March 20, 1906, be adopted; (2) that the Council be requested to take the necessary steps forthwith to apply to His Majesty the King for a revised or supplemental charter embodying the said Report and recommendations, and also as soon as possible to prepare and present a Bill to Parliament to give effect to the same.

The following is the Report of the Registration Committee:—

"To the Royal Institute of British Architects—

The Committee have the honour to report that a Sub-Committee have held fifteen sittings, and have heard the evidence and views of twenty-four architects from various parts of England, Ireland, and Scotland.

As a result of their deliberations the Committee is impressed with the desire of many architects (especially those who are practising in the provinces) that a legal status should be given to duly qualified practitioners in architecture, and they are of opinion that this can be met by applying to Parliament for a legal diploma of membership of the Royal Institute of British Architects, it being made compulsory that after (say) 1912 all architects, before receiving this diploma, must have passed through a definite course of architectural education in a recognised school.

The Committee believe that in a short time if this were done the holding of such a diploma would prove to be of professional value to all practising architects.

It is generally admitted by the advocates of the present draft Bill that the only chance of getting Parliamentary powers to carry out such a penalising proposal as the registration of the title of architect would be (1) by placing the registration in the hands of a board partly composed of members outside the Institute, though it is suggested that the Institute should be largely represented upon it; and (2) by exempting from its operations all the members of the Institutions of Surveyors and Civil Engineers. It is also generally admitted that the standard for admission to such registration would have to be a low one.

The Committee believe that unless the profession can approach Parliament with approximate unanimity there is little chance, in the present state of public business in the House of Commons, of getting any contentious measure passed.

The Committee therefore recommend that at present the Institute should confine itself to attempting to obtain Parliamentary recognition for its membership, an attempt which, they believe, would meet with very general support. Such State recognition would encourage education and raise the qualifications of architects, and would at the same time avoid the temporary necessity of granting a statutory title to unqualified men.

The Committee recommend that the title of the Institute be changed to that of "The Royal College of Architects," and that a *temporary* third class of professional members be established.

As an appendix to this Report the Committee submit an outline of suggestions to give effect to the recommendations herein contained.

The Committee beg leave to state that this Report has been adopted by them unanimously at a meeting on March 20, 1906, at which the following members were present:—

Edwin T. Hall (*Vice-President*), in the chair.
R. S. Balfour.
W. H. Atkin Berry.
A. W. Brewill (Nottingham).
J. J. Burnet (Glasgow).
J. T. Cackett (Newcastle).
W. D. Caröe.
T. E. Collcutt.
A. W. S. Cross.
E. Guy Dawber.
E. M. Gibbs (Sheffield).
W. J. Gilliland (Belfast).
J. S. Gibson.
Alexander Graham (*Hon. Secretary*).
E. A. Gruning.
G. H. Oatley (Bristol).
George Hubbard.
H. V. Lanchester.
A. N. Prentice.
G. H. Fellowes-Prynne.
John W. Simpson.
John Slater
Leonard Stokes (*Vice-President*).
C. Harrison Townsend.
Paul Waterhouse.
Sir Aston Webb.
Edmund Woodthorpe.

The President, whose absence through illness was deeply regretted, together with Mr. H. T. Hare, *Vice-President*, and Mr. J. A. Gotch, who were unavoidably prevented from attending, have desired their names to be added to those appearing.

By order of the Registration Committee,
W. J. LOCKE (*Secretary*).

Appendix to the Report: Heads of Scheme for Raising Qualification of Architects.

(1) Revise the Charter, and (2) submit a Bill to Parliament.

Charter Revision.

(*a*) Change name to Royal College of Architects, and the affixes F.R.I.B.A. and A.R.I.B.A. to F.R.C.A. and A.R.C.A.

(*b*) Substantive provision—In future Fellows to be elected (1) after 1906 from those who have passed the Associates' Examination; or (2) by Council in special cases.

(*c*) To authorise the constitution of a scheme of education to be compulsory on all candidates coming up for examination after 1912.

(*d*) Create new subscribing class of temporary duration, without the power of voting, to be called Licentiates (L.R.C.A.), at a low fee, to admit *bonâfide* architects who are not eligible for F. or A.R.C.A.

All members of allied or other societies of architects, found eligible by the Council of the R.C.A., to be admitted as Licentiates without election. Admission to class to be closed within a year after the passing of the Act.

All to sign declaration and obligation as to professional conduct.

(*e*) F., A., and L. to be defined as professional members.

(*f*) Disciplinary powers to be increased with power of appeal.

Bill to Parliament.

Declare it is in public interest that employers should be enabled to distinguish between architects recognised as qualified by a competent authority and those not so recognised.

Enact

(*a*) Following the precedent of the Law Society, the Royal College of Architects (already recognised by Parliament as authority for granting certificates required by district surveyors before they can receive appointments) be empowered and required, by its Council, to institute and supervise education and examination of architects for admission to the R.C.A., and to confer the titles F.R.C.A. and A.R.C.A.

Confirming all such present titles.

(*b*) Give statutory force to present charters.

(*c*) Legalise scale of charges, to be approved by Privy Council, for all professional members of R.C.A.

(*d*) Municipalities and other public bodies acting in fiduciary position shall on the erection or alteration of buildings in cities or towns employ a professional member of the R.C.A.

(N.B.—It is a question if clause (*d*) should be introduced, but it is likely to commend itself to Parliament, and it follows a policy long supported by the Council and by a large number of the members of the Institute. At the worst it could be struck out of the Bill.)

Memorandum to be Considered at the General Meeting.

In accordance with a resolution of the Registration Committee the President appointed in October last a Sub-Committee, consisting of the following:—Sir William Emerson, Sir Aston Webb, Messrs. J. Slater and T. E. Collcutt on the one side, and Messrs. J. S. Gibson, A. W. S. Cross, W. H. Seth-Smith, and George Hubbard on the other side, with the President as chairman. Subsequently, owing to Sir Wm. Emerson's absence in India, Mr. E. T. Hall was nominated by the President to take his place, and the President's selection was subsequently confirmed by the Registration Committee.

At the first meeting of the Sub-Committee, on October 25, 1905, the following procedure was agreed upon—viz., to summon twenty-four witnesses, comprising six metropolitan and six provincial architects in favour of registration, and a similar number of metropolitan and provincial architects holding the opposite view, the witnesses to be summoned to give their personal opinion on the question.

The first meeting for the examination of witnesses was held on November 22, and eleven subsequent meetings were held, when the following twenty-four gentlemen were good enough to attend and express their opinions before the Committee. Those in favour were Messrs. W. Gillbee Scott, H. A. Saul, Lewis Solomon, Ellis Marsland (Hon. Secretary, Society of Architects), H. W. Wills, F. R. Farrow, H. L. Goddard (Leicester), S. Perkins Pick (Leicester), H. Smith (Bristol), W. J. Gilliland (Belfast), J. W. Beaumont (Manchester), John Keppie (Glasgow); and against them Messrs. J. Macvicar Anderson, Professor Beresford Pite, Reginald Blomfield, A.R.A., Basil Champneys, H. H. Statham, T. G. Jackson, R.A., C. Hadfield (Sheffield), Professor Capper (Manchester), J. J. Burnet (Glasgow), J. A. Gotch (Kettering), W. M. Fawcett (Cambridge), and Professor C. H. Reilly (Liverpool).

A shorthand writer was present thoughout the proceedings to place the evidence on record.

The Sub-Committee then proceeded to consider its Report to the Registration Committee. The general effect of the evidence may be briefly summed up as follows:—On the one hand it was strongly felt by the witnesses in favour of registration that the standard of architectual ability would be raised by instituting compulsory training and examination; and also it was thought that, in the interest alike of the public and the profession, only those who had proved their competence by passing a qualifying examination should be legally entitled to call themselves architects.

On the other side there was an equally strong feeling that the measure proposed would have a tendency to lower the art of architecture, and that, as the test to be applied must, in the opinion of many, be a low one, there would inevitably be a tendency to register very poorly qualified men; and that, though examinations might fairly test a man's constructive knowledge, they could not fix a standard in art.

It seemed obvious that with these strongly conflicting views there would be the greatest possible difficulty in obtaining Parliamentary sanction to the measure proposed; and the Sub-Committee, after due deliberation, therefore unanimously agreed to the terms of a Report, which was subsequently submitted to and approved at a well-attended meeting of the full Registration Committee held on the 20th inst. It was considered that, amongst the incidental advantages to be obtained by these proposals, and in addition to those mentioned in the Sub-Committee's Report, (*a*) it would ensure legal recognition of the Institute's scale of charges; (*b*) it would enable the Institute to deal more effectually with cases of dishonourable professional practice; (*c*) and it would be likely to meet with the fairly unanimous support of the whole body of the Institute."

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of this Association was held on Friday last week at No. 18, Tufton-street, Westminster, Mr. E. Guy Dawber, President, in the chair.

In the unavoidable absence of Messrs. H. Tanner, jun., and A. Maryon Watson, the Hon. Secretaries, Mr. Francis Hooper read the minutes of last meeting and the nominations.

The Chairman said that they would all regret to hear that Mr. Watson had been obliged to resign his position as Hon. Secretary owing to ill-health. They were all sorry to hear this, and they would all wish to express their appreciation of what Mr. Watson had done for them in the past, and they hoped he would soon be recovered.

The Building Fund.

Mr. W. Kaula having been elected a member, the following further donations to the Building Fund were announced:—

	£	s.	d.
Horace Cheston	5	0	0
Walter Gilbert (further donation)	2	2	0
F. Dare Clapham (double sub.)	1	1	0
A. T. Bolton ,,		10	6
W. Millard ,,		10	6
D. Newman ,,		10	6
H. K. Boreham ,,		10	6

Deceased Members.

On the motion of the Chairman, votes of condolence were passed to the relatives of the late Mr. Zephanial King, Mr. Lancelot Simmons, and Mr. Frank Whittingham. Mr. King, he said, was a very old member, who joined in 1864.

Mr. Hooper announced that the Camera and Cycling Club would make an Easter tour to Winchester, commencing on Thursday, April 12.

The House List.

The Chairman then read the following House List for session 1906-07, remarking that it was open to any member of the Association to put forward any name for nomination before the meeting on April 6:—

As President, Mr R. S. Balfour.

As vice-presidents (two to be elected), Messrs. Walter Cave and A. Needham Wilson.

As council (nine to be elected), Messrs. Louis Ambler, F. D. Clapham, E. Guy Dawber, J. B. Fulton, Theodore Fyfe, J. S. Gibson, W. Curtis Green, Arthur Keen, Arnold Mitchell, John Murray, A. N. Peckham, E. A. Rickards, J. MacLaren Ross, S. J. Tatchell, A. Maryon Watson, R. Douglas Wells, R. F. Wheatly.

As hon. treasurer, Mr. Henry T. Hare; as editor of the *Architectural Association Journal*, Mr. Maurice E. Webb; as hon. librarian, Mr. E. Gunn; as hon. secretaries, Messrs. H. Tanner, jun., and C. Wontner Smith. Other officers—Hon. solicitor, Mr. W. H. Jamieson; hon. assistant librarians, Messrs. H. J. Worrow and Percy May.

The London Club-house of the Last Century.

The following paper, prepared by Mr. A. W. Soames, M.P., was then read by Mr. D. G. Driver, Secretary, in the absence of the author:—

"'Man is said to be a sociable animal,' says Addison in opening his 'Essay on Clubs,' and it seems indeed to have been the custom for men, and women also, to associate themselves together in clubs from a very early period of the history of the world. These clubs, however, in the early days usually partook more of the nature of religious or trade guilds than of the modern social club, although in ancient Rome instances of the purely social club are not wanting.

But, as far as I have been able to ascertain, the erection of buildings devoted exclusively to the use of a social club in England does not go further back than about the middle of the XVIIIth century. Before that date these clubs met in taverns or at coffee-houses, usually on fixed days, and they did not as a rule appear to have had any room or rooms reserved for their permanent exclusive use.

The earliest known club in London of the social type seems to have been the Bread-street, or Friday-street, Club, originated by Sir Walter Raleigh, which met at the Mermaid Tavern; and among others which sprang up later may be named the Green Ribbon Club (1675), which apparently was the first to provide permanent headquarters for a political party at the King's Head Tavern, at the south-west corner of Chancery-lane. In the course of the XVIIIth century we find that White's was founded, or refounded, in 1730; the Cocoa Tree, 1746; Boodle's, 1762; Brooks's, 1764; and Arthur's, 1765. And these clubs, outgrowing the accommodation of coffee-houses or taverns, erected buildings for themselves. During the next half century only two clubs—and those of a different character—the M.C.C. (1787) and the Smithfield (1798) were founded, and it was not until the year 1813 that clubs began to spring up in any numbers in London. Between 1813 and 1832 no less than fourteen clubs were founded:—The Guards', 1813; United Service or Senior, 1815; Portland, 1816; Travellers', 1819; United University and Union, 1822; Athenæum and Oriental, 1824; Junior, 1827; Wyndham, 1828; Oxford and Cambridge, 1830; Garrick, 1831; Carlton and City of London, 1832. Following these, we find in 1837 the Reform and Army and Navy (or Rag), and in 1840 the Conservative Club. This may be said to terminate the earlier period of club building, as in the next quarter of a century comparatively few new clubs were founded; and, indeed, the bulk of the newer clubs belong to the last twenty years of the century.

The evolution of the club-house, as might be expected, reflects changes in our social habits. Two, at any rate, of the older club-houses—the Athenæum and the United University—when built contained no smoking-room. It was not until 1857 that Thackeray succeeded in persuading the committee of the Athenæum to allow smoking on the premises. In the case of the United University it was found necessary to add a third floor in order to provide a smoking-room. This house, which was built by Wilkins, the architect of the National Gallery, has lately been pulled down, and a new club-house is being erected on the site by Mr. R. T. Blomfield, A.R.A. In a remote corner of the Oxford and Cambridge Club may still be seen the row of pegs on which the few members who smoked in the early days of the club used to hang their coats, which they wore when indulging in that pleasant, but then unpopular, habit.

The greater facilities for travelling of the present day have also had their effect on the clubs. Not only have they increased in number, but also in size, and within the last few years it has become usual for clubs to provide bedrooms for members, which was only the case in a few of the old clubs, where perhaps a dozen might be found; while the modern political club, such as the National Liberal or the Constitutional, with its 108 bedrooms, is really more like a hotel than the old-fashioned club. Consequently we find that, whereas the Carlton and Conservative Clubs have only one floor above the ground floor, the Constitutional runs into six stories and 200,000*l*., while the Travellers' was built for the modest sum of 23,160*l*., and the Athenæum cost no more than 34,239*l*. 2s. 6d.

Two circumstances may be noticed which had a considerable influence on the early clubs, the one beneficial and the other adverse. The removal of Carlton House, which faced the bottom of Waterloo-place, gave some excellent sites, now occupied by the Senior, Athenæum, Travellers', Reform, etc.; but, unfortunately, the period was one when exteriors were almost invariably rendered in stucco or cement, and this detracts seriously from the appearance of nearly all the older clubs.

The planning of a club-house, of the earlier type at any rate, given a well-lighted and sufficient site, is not a very complex problem, and it is one that gives excellent opportunities to the architect. The hall and staircase naturally play an important part in the design, but, with a few notable exceptions, the designers of our club-houses have not made the most of their opportunities in this respect. In many cases we find a spacious hall with an ample staircase, but

the effect of the whole completely destroyed by the approach being at one side of the hall, and not opposite the staircase. A notable instance is the United Service Club. The hall is central and on a vast scale, occupying indeed a very large part of the site, and a central flight of stairs rises boldly, branching right and left and returning on both sides to the first floor. But the approach to this hall is by dodging out of a corner of the outer hall or lobby at one side of the staircase, with the result that there is no vista, and the effect is absolutely lost. The same is very largely true of the other old service club, The Army and Navy (or Rag), which contains a large, florid staircase, similarly placed and planned, except that the central flight, instead of descending in an unbroken line to the ground floor, branches right and left shortly before reaching the ground, with a questionable effect. In the Conservative Club, also, the effect of a somewhat remarkable hall and staircase is diminished by a side approach in one corner of the hall.

As an example of how not to do it the Oriental may be cited. Here, again, we have an outer lobby, not particularly well designed, communicating near the corner again, with a central hall which is little better than a well, and has a poor geometrical staircase.

The Union Club has also a geometrical staircase, but the approach is better, and the space not so cramped. As, however, the main staircase ascends to the second floor, the well-like effect is not entirely avoided; and, indeed, there seems to be a good deal to be said for the plan adopted in many of the older houses of carrying the main stairs only up to the first floor, and reaching the second and upper floors, if any, by a subsidiary staircase.

At the Oxford and Cambridge Club an outer hall leads by thirteen steps into an inner hall, with stairs facing, but, as they are dog-legged, and the return flight cuts in half the large windows on the half-landing, the effect is far from good.

The hall of the Junior United Service is entered through a small glazed lobby, probably an addition to the original scheme, and immediately opposite is a very broad flight of stairs, returning dog-legged both ways; but the effect is much marred by coarse and heavy detail, and the dog-legged flights are not happy.

At the Reform the hall, of the *cortile* type, is very successful, but the stairs are almost concealed, and hardly enter into the design at all.

The Conservative Club possesses a fine hall, to which allusion has already been made. It is square in plan, and the stairs ascend through an archway in the middle of one side, but the distinctive feature is a coved circular gallery at the first-floor level, with a domed glazed light above. This gives four rather awkward spandril-shaped soffits to the gallery, but the effect is striking and distinctly good, though one could have wished for rather more refined detail.

The treatment of the stairs in the National Liberal Club is somewhat unusual. The site is of an awkward shape, and it was no doubt a matter of difficulty to contrive a stately staircase for so lofty a building of so irregular a plan. The stairs ascend round an oval well, and the result is not particularly happy.

The most successful treatment of the hall and staircase is found in the Athenæum. The plan is both simple and effective. The site is a regular oblong, about 103 ft. by 79 ft. This space is divided into three portions by walls parallel to the shorter sides, of which the middle part, occupied by the hall and stairs, is considerably the largest, and is roughly two-fifths of the whole. The entrance-hall, which is only one story in height, is divided by irregularly-spaced colonnades somewhat in the manner of a basilica, with a low segmental coffered ceiling over the nave and flat ceilings to the aisles. At the end of this hall, which is somewhat dimly lighted by windows alongside the main entrance, is seen a broad and lofty flight of stairs, branching right and left and returning on both sides, the whole flooded with light from above. This plan of lighting is very pleasing, and the effect of the whole is very good.

The lighting of large rooms 20 ft. high or more is a matter of some little difficulty. The older architects for the most part frankly gave up any attempt to produce a window that would reach anywhere near the top of their rooms, and took refuge usually in a coved ceiling. As these clubs mostly occupy positions where there is a good light, and their rooms are not very wide, I am not sure that they were not right. Certainly the elevations gained in solidity and dignity by having sufficient wall space, where it is not frittered away or overloaded, and the attempt to use very large windows in the New University, Junior Constitutional, National Liberal Club, etc., is not so successful as to be likely to induce anyone to follow their example. In a few cases—*e.g.*, Oxford and Cambridge and Junior Carlton—an additional height has been obtained by using round-headed windows. In one case—the 'Rag'—this difficulty has been met in another way. The ground floor rooms have a window of ordinary dimensions, surmounted by an entablature carried on engaged, rusticated columns, and above this a sort of fanlight, square-headed externally, but arched on the interior. The result is not pleasing; externally it suggests an entresol, and I do not think the interior is any the better for them.

The majority of the large rooms are, of course, lighted from the side, but the coffee-room at the Oxford and Cambridge (65 ft. 10 in. by 32 ft.) is lighted by lofty windows at both ends, a method of lighting which does not give a pleasing effect.

Some of the earliest clubs—*e.g.*, the Athenæum and United Service—have the ground floor very little raised above the street level, but it was a very usual practice in later houses to raise the ground floor a few feet higher, and get a fairly well-lighted mezzanine to provide lavatories and offices.

One of the principal objects of the designer of a club is, of course, to provide three or four rooms on a large scale which shall have some architectural character and look comfortable withal. I hold, then, that the ideal room for a club, whether it be coffee-room, drawing-room, library, or smoking-room, is one which provides a considerable number of nooks or recesses, where little coteries can assemble, or where a quiet table for reading or writing can be placed. Nothing gives an air of less comfort to a coffee-room than a bare space of straight wall with an interminable row of little tables set against it, all of the same size and shape. Therefore I would say to anyone who has the good fortune to design an important club-house, break your room up boldly into bays, with columns and antæ of ample projection. An excellent instance of this is the library at the Travellers', the most charming room in any club in London. The dimensions are 65 ft. by 22 ft. 6 in. The central bay is lighted by three grouped windows, and the end bays by one each. Slender coupled shafts stand well away from the antæ on pedestals connected to them, and some 7 ft. or more from the side walls. The entablature is returned across the room over these shafts, and the effect is most happy.

In Barry's later house, the Reform, we find a similar arrangement. Here the coffee-room and library are each about 117 ft. by 27 ft., and 20 ft. high, and are divided again into three bays and recesses at each end. But here, instead of a single entablature crossing the room, he has separated his bays by two entablatures about 10 ft. apart, with a soffite between at a lower level than the ceiling, and carried in the one room on single columns in antis and in the other on coupled shafts on pedestals standing boldly away from the walls. This arrangement gives additional nooks for small tables, and somewhat disguises the excessive length of the room in proportion to the width. Both rooms are very successful, and the library is second only to that in the adjoining house.

The L-shaped room was not employed in any of the older houses, but it is not to be despised for a club. A more sociable method of entertaining strangers is to allow them the use of the smaller arm of such a room, instead of relegating them to a badly-lighted and stuffy little back room, as is so often their unhappy lot in the older and less spacious club-houses. The Union has recently made an alteration to its coffee-room, and adopted this plan, and two good examples of L-shaped rooms are to be found at the Junior Carlton.

Time will not permit me to give more than a few notes upon some of the more important club-houses, and, indeed, an elaborate description of buildings whose appearance must be familiar to all would be a work of supererogation. Taken as a whole, I should put the Reform Club first in order of merit. The plan is very simple. The main building is a rectangle 120 ft. by 105 ft., and in the interior is a covered courtyard, 56 ft. by 51 ft., surrounded by a colonnade of Ionic pillars on unmoulded pedestals supporting a gallery, above which a Corinthian colonnade carries the roof. This arrangement gives a perfectly symmetrical, dignified, and spacious interior, but the effect is a little marred by the interlacing cove lantern light, apparently of cast-iron. The use also of scagliola for the columns and wall surface is to be regretted.

This plan relegates the staircase to a very unimportant place in the design. It is entirely inclosed, and leads up through an arch opening in the middle of one of the shorter sides. The plans of the ground floor and first floor are almost identical. On the south there is on both floors a room about 117 ft. by 27 ft.; on the west one of 50 ft. by 25 ft., plus a 7 ft. recess; and on the north or entrance side and east or staircase side smaller rooms. As regards the exterior, the composition is of the simplest. The north and south elevations show three floors each of nine windows equally spaced, and of one design for each floor, bound together by mouldings and enriched bands, broken only by a central door on the north, while the side elevation shows eight windows, with the four middle ones grouped rather closer together. A bold cornice and rusticated quoins complete the composition. The result of the simplicity of treatment and ample space of plain wall is to produce a building of which breadth and repose are the leading characteristics. It may be said by some that there is not enough window for our northern clime, but, as no room in the club is more than 27 ft. wide, they are, as a matter of fact, sufficiently lighted, and I, for one, am thankful that Barry kept his wall space as ample as it is.

Its neighbour, the Travellers', an earlier work of the same architect, has a frontage of 72 ft. to Pall Mall, and a depth of 104 ft., with light only to the back and front. The architect has dealt with this by placing his entrance at the west end of the façade; from an outer hall a corridor, broken up into three bays and lighted by an open courtyard, leads to stairs on the left and the coffee-room beyond. This is well managed, and gives a good vista, while the courtyard lights a small house dining-room on the other side, and there is a good morning-room to Pall Mall. Of the charming library on the first floor I have already spoken. The elevation to Pall Mall is very quiet, simple, and well-proportioned, and in treatment much resembles its neighbour. But it suffers from being in stucco and, from the necessity of placing the entrance at one end. The elevation to Carlton House-terrace, with its three grouped round-headed windows, is not so successful, and does not merit the praise which has been bestowed upon it. It is said, with what truth I do not know, that the Pall Mall elevation was suggested by the Pandolfini Palace at Florence.

The Athenæum, by Decimus Burton, is, or was, another building simple and formal in character, but it has been ruined beyond redemption by the unfortunate addition of a third floor set back some 7 ft. or 8 ft. inside the main walls of the building. It surely should not have passed the wit of man to design a third floor without committing such an outrage upon an important building in one of the most prominent sites in London. The removal, too, of the balustrade surrounding the area can hardly be considered an improvement. The continuous balcony at the first floor level is one of the rather unusual features of this building, and the small windows contrived in some of the panels under the balcony towards Pall Mall are certainly not happy. On the whole the exterior, though well proportioned and refined in feeling, leaves one rather cold.

The Oxford and Cambridge Club, by Robert and Sydney Smirke, was built in 1836-7, and cost no more than 26,743*l.*, though the frontage is about 90 ft. and the L-shaped site is 130 ft. in extreme depth, the whole

of which, however, is not covered above the basement. It cannot be considered as particularly happy either in plan or elevation. The dog-legged stairs and end-lighted coffee-room have already been mentioned as not pleasing, but the other rooms are more satisfactory. The elevation is not particularly successful. Sculptured panels over the first floor windows hardly succeed in concealing the fact that there is a vast height of wall above the windows, of which the use is not apparent, and the long, vertical lines which they introduce detract from the solidity of the whole.

The Conservative Club shows a symmetrical façade, with small wings of slight projection, the northern containing the entrance and the southern a large bay window. The ground story is rusticated, and the central block has a detached Corinthian order above, and the whole is finished with a balustrade. It is a building of some dignity, and the front is one of the most successful. The plan gives a fine room to the front, and there is a spacious coffee-room behind.

The United Service Club occupies a fine site, and the main lines of the building are not bad, though not of any striking originality. Exception might be taken to some of the details, but the building has a massive air, and is not inappropriate to a club of warriors.

The designer of the Junior United Service has not attempted any symmetry in his main elevation, but, by boldly placing his main entrance out of the centre of the façade, has secured a fine room with a large bay on the east. The impression, however, of the whole is one of heaviness without dignity, and the end elevation to Regent-street, with its windows of varying heights and shapes, is particularly unfortunate.

The Army and Navy Club, by Parnell & Smith, was completed in 1851 at a cost of 54,000*l*. It owes some of its features to the Palazzo Rezzonico, on the Grand Canal in Venice, which was designed by Longhena in 1680, and owes its upper story to Massuri sixty years later. The entrance in the side street enabled the architects to provide a fine room to Pall Mall, but the details of the interior are over-florid, and not in the purest of style. The exterior is not unimposing, but one could have wished for a little more plain surface for the eye to rest upon.

The Carlton Club occupies a fine site, with a light on three sides, like its neighbour, the Reform, and the building is an elaborate one—a little too elaborate, in fact—and is open to the same criticism as the last. The surface is worried and cut up till there is hardly a square foot of plain surface to give repose to the eye. The polished granite columns, too, afford an unpleasing contrast to the stone, especially as the surface of the stone-work is now unfortunately disintegrating badly.

The Junior Carlton is a building which has been completely remodelled. As originally designed by David Brandon, and opened in 1869, it showed a projecting portico, with the entrance at the east end and a corresponding bay at the western end. A few years later, however, the club acquired the site of the houses which then existed beyond it on the west, and the club was extended and entirely remodelled by Mr. MacVicar Anderson, and reopened in 1886. The entrance is now central, and the plan, which has been skilfully rearranged, gives spacious L-shaped rooms to the east both on the ground and first floors, and provides amply for all the needs of a large club. The elevations cannot be considered as satisfactory as the interior. They are wanting in style, and of no particular interest.

The Garrick is a club of modest dimensions. Though founded in 1831, the present building was not opened till 1864. It was designed by F. W. Marrable, and presents no very remarkable features in itself, though it contains an extremely interesting collection of pictures, mostly portraits of members and of theatrical celebrities. The site is cramped, and irregular at the back, and the architect was compelled to place his entrance out of the middle in order to get a good room to the front on the ground floor.

Of the huge buildings that have been more recently erected for political clubs, it is difficult to speak in terms of much commendation. The National Liberal Club has certainly more architectural character than the Constitutional or the Junior Constitutional, but, while fully admitting that the site was a difficult one, it is impossible to avoid feeling that more might have been made of it. The tower at the angle suggests either a back staircase or a chimney, or both, and a treatment of the angle might have been adopted which would have utilised it as a good and characteristic feature internally as well as externally, as witness the New Gaiety Theatre.

The change in scale between the windows of the lower and upper floors is so great as to be disagreeable, and if the lower windows had not been so vast the building would have gained much in breadth. If, however, it was considered absolutely necessary to keep them so large, more subdivision by mullions and transomes would have brought the large and small windows into better relation with one another.

The Constitutional Club occupies perhaps an even more awkward site, and it has not been successfully dealt with. Terra-cotta, too, is a poor material for a building on so large a scale, but a better material would not have redeemed it. The Junior Constitutional cannot, however, be said to suffer from a poor material, nor does the frontage to Piccadilly offer any difficulties, but a marble front will not carry off a poor design, and this one is quite wanting in breadth and dignity.

With regard to all these three, the question arises whether buildings so lofty and on so large a scale can be satisfactorily treated with gables. I am inclined to doubt it. More emphasis to the horizontal lines is, I think, required than can be obtained with such a treatment.

Before closing a somewhat rambling and discursive paper a word of thanks is due to the secretaries of the various clubs for their courtesy and kindness in affording me facilities for viewing the buildings and valuable information with regard to them—a courtesy which, I fear, is somewhat ill-requited by adverse criticisms upon some of the houses."

Mr. Arthur Keen, in proposing a vote of thanks to the author, said that he had been much pleased with the form and method of the paper, and the subject, interesting in itself, was treated from a wide and comprehensive standpoint. The author had avoided the trivial and minor matters which might have been touched upon, and had gone to the root of the matter. He remembered a paper by Mr. W. Millard, who warned his hearers to be careful of the bugbear of architectural detail, and he was undoubtedly right. In cases where the detail was weak or poor, it was apt to offend to such an extent that we were prejudiced against the building, which might be in all essentials entirely admirable. On the other hand, where the detail of a building was fine and interesting, it might divert our attention from perhaps serious defects in plan and disposition, and from the composition as a whole. The only regret about the paper that he felt was that the author had not shown illustrations of the buildings, which were very interesting, and plans and photographs would have added to the interest. Club buildings were great opportunities for architects, and opportunities which were offered to very few of them. They were generally erected on fine and important sites; they were large buildings, and simple in their parts, and one always imagined that the committee of a club wanted a dignified, quiet, and refined building, rather than one of pretentious character. One must feel a certain amount of disappointment in viewing London club-houses as a whole; several of them were fine opportunities thrown away, and the buildings were of very little architectural importance. Many of them were solid, imposing, and dignified, but dull to a degree. Leaving out of the question the XVIIIth-century ones, which were pleasing and interesting in their way, the only ones which could be considered fine architectural compositions were the Reform, the Travellers', and the Athenæum. As to the Athenæum, he supposed that it was a drawback that the building was fronted with stucco, but it was the fashion of the time, and one must not be too severe for that reason. Moreover the building was so well kept and looked after that we could forget the fact that its front was stucco, especially as it was architectural to a degree and very fine in its proportions, and there was a homeliness and a picturesqueness about the building which were enhanced, he thought, by the paint and distemper with which it was treated externally, and at the present time the paint and distemper had been so well applied that the building was made particularly attractive. Mr. Soames had spoken about raising the building by the addition of an extra story, and they must all regret that that was necessary to the done; but, assuming that it was necessary, he failed to see how it could have been better done. The alternatives presented to Mr. Collcutt, the architect, were very few. The walls might have been raised, or a steep-pitched roof might have been put on, which would have had the drawback of a large number of dormers for the purpose of giving light to the building. Considerable reserve had been shown in the way in which the architect had treated the problem, and addition was made as unobtrusive as possible. It was a difficult matter satisfactorily to add to a building by heightening it; it was easier to widen it. There was the Sun Fire Office in the City which had recently been raised, and no expense was spared to make a satisfactory addition to what was perhaps one of the best buildings in London. The top story was taken off, stone by stone; a second story was then put on to agree in character with the first story, and the top one was replaced as it was before. He felt that the particular charm the building enjoyed before was quite gone; it had previously delightful proportion, exquisite feeling, with a fineness of detail which was particularly pleasing, and which distinguished it from all other buildings in the City, and that all seemed to have gone, although the work could not probably have been better done. The addition of a story was a detriment as a rule, especially in the case of classical buildings, but he supposed such additions were necessary in some cases. Of the other clubs, he felt that the Reform came first among them all; it was a magnificent opportunity, and it was finely dealt with. The fact that the building was on the shady side of the street was a drawback, but, apart from that, there was hardly anything about it which failed to pleased; it seemed to possess all the good qualities of fine architectural design—fitness for purpose and site, fine proportion, exquisite feeling, and scale throughout the front—and there was fine proportion between the voids and solids. The windows and interspaces were judged with admirable feeling, and the whole was extremely fine. As to some of the other clubs, he felt that there were many good opportunities which had not been made the most of by the designers, and one had an uneasy feeling that such opportunities would not come again, for it was rarely that such sites were obtainable; nowadays ground rent is so enormous that a building had to be increased in height to meet the ground rent, and a bank or an insurance office had to be provided on the ground floor. Moreover, nearly every problem offered to architects now was more difficult than in the XIXth century, and he did not know that even Sir Charles Barry, if he were to come back to life, would be able to erect a block of flats with much success. As to the National Liberal Club, he understood that all the main lines of the adjoining building had to be adopted in the club—all the main cornices and strings ran through continuously, and Mr. Waterhouse did not have a free hand, except at the corner, where he had the opportunity of carrying out that well-designed turret at the angle, which gave some scope for his imagination; but the key of the building was set by the adjoining premises.

Mr. Matt. Garbutt seconded the vote of thanks. The author, he said, referred rather disparagingly to the terra-cotta work of the Constitutional Club; but whatever the sins of terra-cotta, it did provide its own sunshine. Red terra-cotta on a dull day was effective, and we ought to be glad of that.

Mr. H. P. G. Maule, in supporting the vote of thanks, said he did not think that the author did sufficient justice to the authors of modern clubs, seeing what great difficulties they had to contend with as compared with the difficulties of architects of earlier club

buildings. In the older clubs, the requirements were to provide large rooms, which meant that the architect could retain the same scale throughout the building, but, in the modern clubs, there were large rooms on the ground floor and small rooms above, and there was a contrast in scale between the upper and the lower floors. The author was rather emphatic in condemning the modern elevations, but he did not say that the plans were often very good; he thought that all would agree that the plans were in many cases admirable, and fulfilled their purpose in a striking way.

The Chairman then put the vote of thanks to the meeting, and expressed regret that Mr. Soames was not present, and that there had been no illustrations to accompany the paper. He also referred to the great difficulty the modern architects of club buildings in London and big cities had to contend with.

The vote of thanks was heartily carried, as well as a vote of thanks to Mr. Driver for reading the paper.

It was announced that the next meeting will be held on April 6, when Mr. E. Greenop will read a paper on "Valuations, Compensations, and Light and Air."

The meeting then terminated.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

V.—FLATS IN HIGH-STREET, KENSINGTON.

AN important block of residential flats, known as Hornton-court, now in course of erection in High-street, Kensington, was selected for the scene of the fifth spring visit on Saturday, March 24, by the Architectural Association. The salient feature of the scheme lies in the fact that no effort has been made to overcrowd the site; but, on the contrary, some praiseworthy attempt is made in the spacious planning to give the building the idea of a bold architectural conception. A clear, regular site was at disposal, surrounded by streets, and, fortunately, the longest frontage, 242 ft., faces the High-street, which, with the average depth of 120 ft., produces an area nearly equal to three-quarters of an acre.

The ground floor and basement are utilised for shops or business premises, while the five upper floors are built as flats, of which there are fifty, of varying sizes. The shops extend over the full width and length of the ground; but the main group of flats is set back considerably from the noisy High-street, and connects two large wings extending the full length of the side streets. Two large enclosed terraces above the shops are thus formed, which Messrs. Daw & Son, the lessees, intend to lay out as gardens, the more important of which will have two fountains.

A large pediment is arranged on the central projection in the recessed front, built entirely of stone, and the only reason for its existence appears to lie in the desire to avoid all external expression in the central party-wall. In this, Messrs. Coleridge & Chesterton, the architects, have succeeded, but the result generally is to convey the idea of a large public institution rather than that of a collection of independent residential suites.

Portland stone is used on the ground story. The upper floors have all their dressings in "Palotte," a soft French stone which is said to harden with exposure, sufficient to withstand the action of the London atmosphere. The carvings and other enrichments are well done, the stone offering greater facilities than any other widely-used material. The upper wall surfaces are faced in red brick. The shop fronts below the main terrace have a stone cornice and balustrade, so that the usual effect of a large plate-glass window appearing to assist the support of a massive superstructure is here fortunately absent.

Steel construction is largely introduced. In this respect Messrs. Moreland have used solid wrought-steel columns in preference to cast-steel to ensure greater reliability and freedom from flaws.

MEMORIAL TO DEAN FARRAR.—The memorial which has just been erected on the south side of the nave of Canterbury Cathedral was executed by Mr. Albert B. Joy. It consists of a frame of grey marble of two shades, with a medallion portrait in Carrara marble of the late Dean as in middle life. The inscription bears an appropriate stanza quoted from "In Memoriam."

THE SURVEYORS' INSTITUTION.

AN ordinary general meeting of the Surveyors' Institution was held on Monday last at No. 12, Great George-street, Westminster, Mr. George Langridge in the chair.

The minutes of the last meeting having been read and confirmed, and some donations to the Library Fund having been announced,

Mr. J. H. Sabin resumed the details on Mr. W. Woodward's paper on "The Means of Locomotion and Transport in London," read before the Institution on March 12.* He said he thought Mr. Woodward had almost overstepped the mark in attacking the London County Council and the British workman. They had before them at the present moment the completion of the London County Council's splendid scheme of a fine thoroughfare from Holborn to the Strand, and, after all, it was the British workman who put into form the creations of Mr. Woodward's brain. It was impossible to do away with the obstruction of traffic. That was a difficulty that had come to stay, and all that could be done was to modify it as far as possible. Obstruction in vehicular traffic arose either wilfully or unavoidably, and Mr. Woodward hit those responsible for it when he named the borough councils and those responsible for the streets, and the drivers of vehicles. He was passing along Albany-street recently in a motor-car, and found the road "up" close to a drinking fountain. Every driver of a horsed vehicle considered his horse in need of water, and drew up at the fountain, with the result that a great obstruction was created. This happened within 100 yds. of the police station, and should have been avoided. An order from the officer on duty would have prevented the obstruction, and he considered that it was possible by stopping this kind of thing to give some relief in crowded streets. What was wanted was a corps of traffic managers—a body of alert, sharp men who would see what difficulties arose, and act immediately. It would be necessary to have an Act of Parliament by which wilful obstruction could be avoided. There was a constant obstruction at the junction of Tottenham Court-road and Oxford-street, and quite recently, at the corner of Euston-road and Tottenham Court-road, he saw two brewers' waggons, one distiller's waggon, and two mineral water waggons making deliveries, and, added to this, a dust cart collecting house refuse. This, at 9.50 a.m., was a scandal. An alteration was needed in the hours of delivery, and dust should not be collected between the hours of 9 a.m. and 6 p.m. The traffic managers, he suggested, should be independent of police. There were narrow streets in which it was impossible to avoid delay, but even there it must be reduced as far as possible. There were very few main streets without other streets running parallel with them. Neither fast or slow traffic took these streets, and the traffic managers should have power to direct certain classes of traffic to them. There were, here and there, blocked ends to these parallel roads, and at a comparatively small cost it would be possible to remove the houses at the end and get a road through. With regard to trams, he could join issue with Mr. Woodward, because he found himself with the Advisory Board, who had just reported. It was said there were 350 miles of lines, but he did not know whether this referred to single or double lines. Even supposing it referred to double lines, it was not enough, for it meant a mile of tramline to a square mile of street. Moreover, we had such a number of dead ends, which it was suggested should be joined up in the centre. But there was another method, and that was the introduction of circular routes. Under this system a car need never stop dead on its route except at the outer suburban end, and then a number of cars could follow each other without difficulty. If the Embankment were used as an exchange, there could be continuous services over the bridges. It seemed to him a lamentable thing that this was not done. He had occasion to visit Manchester recently, and the system in vogue there filled him with admiration. The cars followed each other with rapidity, and occasionally six cars one after the other, but when they reached cross roads they divided naturally, and disappeared without the least confusion or obstruction.

Mr. Hudson said he did not sympathise with the previous speaker's condemnation of the police, who had only power to interfere with stopping places. Traffic certainly ought to take routes. He did not think Mr. Woodward's proposals would have the effect that was desired, and he was firmly convinced that nothing less than the re-alignment of our streets would affect the metropolis in a permanent way. What was done now should not be for this generation alone to carry out, but should be borne by two or three generations. People said: "Let posterity look after itself," but it must be remembered that what could be done now could not be done so easily some years hence. If, after the Great Fire, the metropolis had been replanned, or even had a plan of 120 years ago been carried out, we should be in a much better position to-day, and every year of delay increased the cost of reform. We must also consider the nature of vehicles. Mechanical traction was being extensively used now, and when horse omnibuses were superseded by motors, a quarter of the space would be gained, and a great deal of delay avoided. With regard to tramways, he thought municipal tramways should be checked, as motor-omnibuses were preferable. He would be very sorry to see tramways along the Embankment. The view along the Embankment from Westminster Bridge was very fine, and it would be unfortunate to see such a disfigurement. There was no objection to trams coming over the bridges. In Paris they did so without any æsthetic loss. He made a plea to everyone to do what they could to prevent a bridge being built through Temple-gardens, 600 yds. from Blackfriars Bridge. Overhead lines were undesirable. Anyone who had seen them in New York would know they would never be tolerated in London, because of trains passing in front of windows, the awful noise, and accidents. He believed that in New York they were about to be abolished. Mr. Woodward considered street refuges should be dispensed with, but with wide streets and fast-travelling vehicles, it seemed necessary to increase the number of them, for the people must be safeguarded. It had been suggested that there should be fixed stopping-places for stage vehicles, but he pointed out that the fewer the stopping-places the longer must the vehicle be kept waiting to let a greater number of people down, and so no time would be saved.

Mr. Walter Beer said he thought if any improvement could be effected, it was only by a bold and comprehensive scheme. It was not passenger traffic that required immediate consideration. We had about to come into operation a number of tube railways, and motor-omnibuses were being rapidly brought into service. We must, therefore, wait and see what improvement these would effect. It was vehicular traffic that required consideration. He was somewhat disappointed with the report of the Commission taken as a whole, for it did not contain an expression of opinion as to what should be done. It was only in the independent report of Sir George Bartley that one found any expression of opinion. He found, after giving a great deal of thought to the subject, that the only way in which the problem could be solved was by two main arterial roads north and south and east and west. He believed it had not been previously suggested that these roads should start in the country and finish in the country, or they would not have a sufficient collecting area to attract traffic and make the expenditure worth while. These roads must be carried at a high level through crowded areas, or else at congested places the traffic would be held up, and it would then not be worth while for a driver to go out of his way to get on the road. They must have railways along the route either under or overhead. The construction of the roads would displace a large number of people whom it would be impossible to rehouse in the neighbourhood, and these railways would carry them out in the country to their homes. Having made these railways at enormous cost, they would have formed a valuable route which would help to repay the cost. It would be necessary to acquire three times the width of road that was required, in order to recoup themselves, and, working in this way, recoupment came out nearly all right. He was firmly convinced there was no other means of relieving traffic but by main arterial thoroughfares, and they would pay their way.

*See our issue for March 17.

Mr. Lynden Macassey remarked that a great distinction had to be drawn between what should and what could be done at present, and what could and should be left to the future. One had to satisfy oneself that the existing streets were used to their full capacity. They might find some cause of congestion and obstruction in the action of borough councils in divided streets. He had heard of a case where one council proposed making a shelter, to which the other council would not agree, and, as a consequence, a shelter, with only one side, was built by the council desiring it. Then these divided streets were broken up one side at one time of the year, and the other side at another time, as the respective councils thought fit. Then, where new estates are laid out, or streets made, one continually found that the roads were laid out at right angles to those on an adjoining estate, with no possibility of amalgamation into one arterial route. Tramways also were constructed so that changing became necessary, and this changing taking place on main routes caused delay and obstruction. Further, new railways were constructed without consideration as a whole, but each as an independent unit. With regard to streets, tramways, and railways, the first thing to do was to secure co-ordination. This must be taken in hand by some impartial and comprehensive tribunal. In France, when roads commenced to be laid out and railways constructed, they were part of a great scheme, and railways recently constructed were part of this scheme of years ago. Before any attempt was made to construct new streets and railways, there must be a tribunal to decide whether what was proposed to be done fully met the requirements. This tribunal should have advisory powers, and any new Bills should be referred to it for report. It should also have supervisory powers, and report on the shortcomings of various undertakings, and expose the action of local authorities in allowing streets to be constructed in haphazard ways, and in opposite directions. It should have some control over regulation of traffic, so that certain streets should not be used for heavy traffic at certain hours of the day. It should have mediatory powers. A great deal of trouble now was due to friction between various authorities, and if those differences could be reconciled a great improvement would result. The enormous advantage of such a tribunal was felt in Boston. Put it to work in London, give it a fair trial, and then see what really was wanted. He did not say many new streets were not wanted, but, before commencing, see that those already in existence were used to the best advantage, and find out exactly what and where new ones were required.

Mr. Assiter said he agreed with some of Mr. Woodward's conclusions, particularly with regard to the conservatism of Londoners. They would not take up any new scheme. He advocated measures that would give immediate relief rather than wait for those grand avenues which could not come for many years. When these new thoroughfares were constructed, the State should assist, London being already over-rated. Sir George Bartley struck the right note in saying that the streets were for London to carry out its trade, and they must be made to fit the trade, not the trade to fit the streets. Traffic must not, therefore, be restricted. The rules of the road should be enforced, and slow traffic made to take the sides of the road, as, in fact, it was supposed to do now, but did not. Carmen also drew up without regard to public convenience, and scavenging went on at all times of the day and made matters worse. He did not agree with Mr. Woodward's remarks on tramways. He thought trams, especially electric trams, were very useful on established routes. The cars were much quicker than the old horse cars, and with motor-omnibuses also on the road, we might hope for some improvement in the condition of the streets. Trams should not come into the central parts of London—certainly not surface trams, and underground trams should be for further consideration. In London we never did anything until we were absolutely obliged; warnings were neglected, and far-seeing people were regarded as revolutionists. We had to spend millions to do what might have been done at a small cost after the Great Fire, and now we were leaving things for our descendants to do in the same way. With regard to the development of outer London, some supervision was desirable. Estates were regarded independently, each as an isolated scheme, and the only desire seemed to be to get as many houses as possible on them, and give adjoining owners as little opportunity as they could for getting out of their land. These works were carried out under the authority of local governing bodies, whose officials were frequently incompetent, and thus there was no continuity or comprehensiveness in the scheme. While we respected private interests, we must also remember there were public interests, and we must be careful to avoid in outer London the mistakes and difficulties of inner London. Country lanes in outer London were built upon without any attempt to widen or straighten them, and in thirty years' time these places would probably be densely populated, and have to be improved at enormous cost. There was a need for cross-country communication. When one got ten or twelve miles out of London, one had to go seven or eight miles to get a short distance across country. He suggested the formation of a central body to deal with the whole of Middlesex and those parts of Surrey, Kent, and Essex lying within twenty miles of Charing Cross.

Mr. Nicholson observed that there was a difficulty in regard to expenditure. If London called in State aid, why should not other large towns do the same? and if they did, we should have the cost taken off the rates and put on the taxes. One remedy was decentralisation, as far as factories were concerned. The head office of these concerns should remain in London because of telephone and other facilities which could not be had elsewhere. This would remove a great deal of obstruction to traffic. The suggestion as to directing traffic was a good one. Commercial vehicles and cabs carrying a passenger might go into the side streets. The advantages of tramways had been severely criticised, but other places found them to answer. Of course, if they were put in narrow streets the result would be confusion. They did not depreciate the property although they changed the nature of it. Trams should approach as nearly as possible the centre of London, and then connect with tubes. He considered the statement that motor-omnibuses were better than trams was open to question on account of the skidding of the former on wet roads. If suburban traffic was going to be diverted to omnibuses, special roads would have to be constructed for them. The dust from them would be unbearable, while the steel rails of trams would give no dust.

Mr. Penfold having spoken,

Mr. Woodward replied. There were a great many people, he said, who thought that trams outside London would be beneficial. Tramways along the Embankment must not, however, be permitted. There would be conveniences, no doubt, but the splendid effect from Westminster Bridge of the great amphitheatre terminating in St. Paul's Cathedral would be ruined. He had no objection to horse trams or electric trams, but what he did say was that, although the policy of the London County Council five years ago in developing them was correct then, it was now open to question. He simply desired that they should now stay their hand and watch the effect of the motor-omnibuses. They would find, however, that, having made up their mind to incur this expenditure on tramways, the London County Council would do so. What was wanted was a traffic board consisting of practical men, independent of the London County Council, or any other body, with great powers to act at once.

It was announced that the next meeting would be on April 23, at 4 p.m., when a paper on "The Effect of the Education Act of 1902 on Rural Districts" would be read by Mr. J. Willis Bunn.

ROMAN CATHOLIC CHURCH, PUTNEY.—The foundation-stone of the new Roman Catholic Church of St. Simon Stock was laid by the Right Rev. Peter Amigo, D.D., Bishop of Southwark, on the 3rd inst. Mr. J. C. Radford prepared the plans. The building will be of stock brick, with red brick dressing and blue brick plinth. There will be an organ gallery over the main entrance and the baptistry, whilst on the outer wall of the building, and facing Hazelwell-road, will be a statue of the patron saint of the church. The cost will be about 3,000*l.*

THE INSTITUTE OF BUILDERS.

THE twenty-second annual general meeting of the Institute of Builders was held at the offices of the Institute, 31 and 32, Bedford-street, Strand, W.C., on Wednesday, the 21st inst.

The minutes of the last annual general meeting were read and confirmed, and the Report of the Council was received and adopted, as also were the audited accounts and balance-sheets of the Institute General and Benevolent Funds for the year ending December 31, 1905.

In the annual Report the Council state that all proposed legislation affecting the building trade introduced into Parliament during the year has received careful attention and consideration, and in cases where the Bills have been carried efforts have been made to eliminate or modify clauses that were calculated to operate injuriously to the trade. A petition against the London County Council London Building Acts (Amendment) Bill was presented in concert with the London Master Builders' Association, and the Council specially mention the services rendered by Mr. W. Shepherd, who gave evidence before the Committee of the House of Commons. Proceeding, the Report says:—

"As the expenses in connexion with Parliamentary work and opposing measures which would injuriously affect the building trade (one of the special objects of this Institute as a representative body) are very heavy, and necessarily fluctuate in different years, it has been considered desirable, as the normal income of the Institute from its ordinary subscriptions is sufficient only to provide for the normal cost of administration, to establish a special fund to provide for the expenses attending Parliamentary proceedings and other exceptional expenses, and your President has issued a circular to the members asking for contributions to this fund. Your Council relies upon receiving a generous response to this appeal.

In consequence of a legal decision, which it was contended established the extraordinary proposition that in reference to bills of quantities an omission was not an error, representations were made to your Council to amend the official form of contract so as to provide against any such interpretation. This proposal was in due course submitted to the Royal Institute of British Architects, who replied that, as in its judgment the clause in the contract (12a) was perfectly clear, no alteration was desirable. As your Council was of the same opinion no further proceedings were taken.

At the request of the Royal Institute of British Architects two members of your Council have been appointed to confer with them on the subject of reinforced concrete, and two representatives have also been nominated, by like request, to represent this Institute at the seventh International Congress of Architects of 1906.

A representative of this Institute has been appointed to attend the Congress of the Chamber of Commerce summoned to consider the proposed compulsory official audit of the accounts of municipal bodies. This is an important matter for the building trade, as, under existing arrangements, the real results of municipal trading are frequently not apparent, and much misapprehension exists as to the profit or loss involved in such enterprises.

As the present office accommodation is quite inadequate, and as on the expiration of the present lease an increased rent is required, your Council is acting jointly with the London Master Builders' Association in the selection of more suitable premises.

Members are reminded that the council-room of the Institute is almost always at their service for meetings or appointments, and the secretary will be pleased to make all necessary arrangements for their comfort and accommodation. Members from the provinces should especially find this to be of real service to them.

During the past year the following grants were made from the Institute Benevolent Fund:—(1) Builders' Benevolent Institution, 50*l.*: (2) Provident Institution of Builders' Foremen and Clerks of Works, 10*l.* 10*s.*: (3) Builders' Clerks' Benevolent Institution, 10*l.* 10*s.*

During the past year the Institute has had a good accession of new members. Your Council regrets to report the loss by death of Colonel Stanley G. Bird, C.B., Mr. Benjamin Hannen, and Mr. G. J. Lough. Colonel Bird was one of the founders of the Institute, and, in order to mark the distinguished services he rendered to the building trade, efforts are being made, in conjunction with other bodies interested, to raise a sufficient sum of money to endow to his memory a bed or cot at St. Mary's Hospital, with which institution Colonel Bird was long associated.

Mr. Frank May, J.P., was elected by the Council to succeed Colonel Bird as Treasurer of the Institute and Trustee for the Institute Benevolent Fund.

In accordance with the articles of association the President (Mr. Benjamin I. Greenwood), one Vice-President (Mr. Woodman Hill), the Treasurer (Mr. Frank May), one Auditor (Mr. E. J. Hill), and four members of the Executive Council (Mr. R. C. Foster, Mr. F. G. Minter, Mr. G. Kett, and Mr. C. E. Skinner) will retire, but are eligible for re-election."

The following elections then took place:—As President—Mr. F. L. Dove; Vice-Presidents—Messrs. W. F. Wallis and F. Higgs; as Treasurer—Mr. H. H. Bartlett; and as Honorary Auditor—Mr. H. A. Bartlett; the Executive Council (to fill vacancies caused by "rota" retirements) elected consists of Messrs. G. Kett, J. W. Lorden, J. S.

Holliday, F. G. Rice, E. J. Hill, T. Holloway, C. E. Skinner.

A vote of thanks was passed to the retiring President (Mr. Benjamin I. Greenwood) for his services during his year of office.

CARPENTERS' HALL LECTURES:

THE NEGLECTED RESOURCES OF OUR BRITISH WOODLANDS.

ON Thursday evening last week a lecture was given at Carpenters' Hall, London Wall, by Sir Herbert Maxwell on "The Neglected Resources of our British Woodlands." The Earl of Leconfield presided.

The lecturer said it was generally recognised that the resources of our woodlands had been sorely neglected in the past for a variety of reasons, but they were capable of slow development if they could be put under a sound system of management. The rapid diminution of the world's timber supply and simultaneous increase in the consumption had occupied the attention of the chief Governments in Europe. In Germany, where the average annual value of the forest products was estimated at twenty-two millions sterling, they had for some years past imported timber at the rate of four and a half million tons per annum, valued at nearly fifteen millions sterling. So long as Germany could obtain timber at a reasonable price abroad her people would spare their own forests, well knowing that the price of timber would enormously increase for every cubic foot. What had we been doing to meet the coming scarcity by developing our resources? We had not yet gone beyond the stage of inquiry. Certain schools had been established, it was true, but this was a mere nibble at a great question, and private enterprise was directly discouraged by the State in the rating of growing woodlands before one penny could be touched, and in the valuation of woods by the Death Duties Act of 1894.

The lecturer quoted the import returns for 1892 and 1902 to illustrate the large quantity of timber, paper, and paper materials (mostly made from wood pulp) imported into this country, and argued that much of that timber might have been grown in the British Isles. He also said that the Government should establish some source of sound information on the subject that the nation might obtain instruction and advice. It had been said that the climate and soil of Great Britain were unfavourable to profitable forestry, but this idea was groundless. He had laid a modest scheme before the Government for the investment of 10,000*l.* in State forestry, which, though favourably considered, had not been acted upon. One thousand acres might be purchased, even at twenty-five years' purchase, for 2,500*l.*; planting might cost 6*l.* per acre, or 6,000*l.*; preliminary expenses, 1,000*l.*—a total of 9,500*l.*, and, allowing 500*l.* for expenses and charges, made up the 10,000*l.* laid out in the purchase of suitable hill pasture. The annual expenses would be 65*l.* It was difficult to obtain any trustworthy returns of British forestry, for the simple reason that British forestry scarcely existed. He could produce only one example, and it showed that sound management would ensure profitable returns from British woodlands, even in the present haphazard condition of the home timber trade. He took the balance-sheet of the Novar Woods in Ross-shire, showing the profit and loss account upon 3,670 acres of woodlands during the years 1885 to 1899. The Novar Estate was distinct from other private properties in this country in that successive proprietors continued planting on a regular system from 1800 to 1850. Had this been continued we should have had an example unique in the United Kingdom of an extensive woodland arranged for progressive annual maturity. This system was suspended between the years 1850 and 1881, but was resumed in the latter year by the present proprietor. From the results we might expect that land worth at present from 6d. to 2s. per acre might be made to yield a net return of 2,024*l.*, or 11s. per acre. If the State were to decide on an investment of 10,000*l.* a year in the purchase and planting of land, at the end of fifty years they would have made a progressive investment of half a million sterling. The property, which could be acquired on a rent basis of 2s. per acre, would yield 11s. per acre over the whole period—a rise in value of 550 per cent., and this estimated on the supposition that the price of timber would remain stationary for half a century. In Germany there were 583,000 people in direct employment in the woods, supporting probably three million persons, and no greater boon could be devised than healthy and remunerative work in the country for British people, and in no part of Great Britain would forest growth be more profitable or flourish more vigorously than in Ireland. He should not recommend a large investment of capital, and probably not one landowner in a thousand could afford the necessary lock-up capital. The price of young forest trees in England was practically prohibitive, larch costing 12*l.* per acre. If forestry was ever to be a remunerative industry this obstacle must be got over, and he suggested co-operation and combination with proper business connexions for the disposal of produce. Young nursery stock could be bought abroad cheaper, and the woods should be placed under capable and well-paid men, whilst a form of limited liability company would escape from paying death duties.

Out of three million acres of British woodlands nine-tenths were in private hands, and if rendered productive, as in Germany, would return two millions a year net profit, or 6s. 8d. per acre. Owing to the failure of agriculture, the increase of rates, and the paralysing effects of the death duties, the time was at hand when woodlands must cease to be treated as ornamental luxuries or be allowed to disappear.

On the motion of Lord Leconfield, a vote of thanks to the lecturer wase carried.

It was announced that prizes had been awarded for an essay on "The Treatment of Woods and Plantations from the age of twenty years to maturity, with full details as to thinning, marketing, and demand for various purposes at different periods of growth." The examiners (Mr. George Marshall and Dr. William Somerville) awarded the first prize of 20*l.* to Mr. Leslie S. Wood, of East Grinstead, and the second prize of 10*l.* to Mr. P. T. Maw, of Nutfield, Surrey.

THE BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE 27th annual dinner of the Builders' Clerks' Benevolent Institution was held on Tuesday evening in the King's Hall, Holborn Restaurant, W.C., Mr. Howell J. Williams, L.C.C., President, in the chair. There were also present Alderman Evan Spicer, J.P., Chairman of the London County Council, and Messrs. J. A. Anderson, E. and R. Bartlett, J. Carmichael, Stephen Collins, M.P., L.C.C., H. J. Leaning, F. Higgs, F. T. Mullett, G. W. Humphreys, John Murray, M. Murphy, Alex. Ritchie, J.P., C.C., E. Smith, J.P., L.C.C., G. Sykes (of Messrs. Paterson, Candler, & Sykes, Hon. Solicitors to the Institution), W. T. Walker, and J. Austin, A.C.I.S., Secretary, and others, nearly 450 members and friends being present.

The loyal toasts having been honoured,

Mr. J. A Anderson proposed "Municipal Bodies." He thought it might be said without contradiction that in no other European nation did the civic spirit exist to the extent it did in our country, and we had reason to be proud of our municipal bodies, because they did unpaid work. The spirit which animated these municipal bodies throughout the country was one of absolute honesty and straightforwardness. With the toast he coupled the name of Alderman Spicer.

Alderman Spicer, in response, said that they were gathered together to assist the Builders' Clerks' Benevolent Institution, and when he remembered that the building trade and its allied trades in London represented something like 430,000 men, he thought that that was a very fair proportion of the inhabitants of this great metropolis. He was glad to be present because the London County Council employed directly a very large number of men—in fact, the Council was almost a building association. If there was anybody he sympathised with more than another it was the clerks of London, many of whom were badly paid, and there was very little cohesion amongst them. There was one problem which they as heads of firms had to solve, and that was, the clerk who, through misfortune, often not from his own fault, found himself out in the cold at the age of forty to fifty. He did not think that the public realised how great was the work the London County Council did; that very day they had passed twenty-two reports of various committees, and the work the Council and other bodies did was often of very great importance.

The Chairman then proposed "The Builders' Clerks' Benevolent Institution," and said he was there for the purpose of reminding them of those who were less fortunate than others. He, as a builder of twenty years' standing, acknowledged with all heartiness the assistance he had received from his clerks and staff. Many prosperous firms to-day would not have been prosperous probably were it not for builders' clerks, who, perhaps, as time went on might need assistance, or they might pass away leaving widows and orphans unprovided for. It was a matter of great admiration to him that builders in the past had recognised that some such institution as this was necessary to meet the demands of those who were unable in time of stress and trouble to help themselves. Was the Institution to cease for the sake of funds? He was sure they desired to do everything they could for their less prosperous colleagues or assistants, and he made an earnest appeal to them for assistance to the cause of the Institution. The Institution started in a most humble way, and all honour to those who started it. It had grown greatly, and it now required an income of between 700*l.* and 800*l.* to keep it going. The annual subscriptions were supplemented by donations, but the work of the Institution ought to be extended to meet the most urgent cases that had been brought to the notice of the committee. The Institution was founded for builders' clerks, but he was told that the clerks did not support the Institution as they ought. Builders' clerks did not know at any time how the hand of prosperity might change, and so they should do all they could to help the Institution. He suggested that the lifeboat method of collecting should be tried, and that every builder's office should have a little box so that the numerous callers should have an opportunity of making some contribution to the funds of the Institution.

Mr. E. Brooks, whose name was coupled with the toast, said they had to thank all those gentlemen who had presided, for many years past, on such occasions. The Institution required quite 800*l.* a year to carry on the work with their present pensioners, but there were some very sad and eligible cases which they should like to see enjoying the pension, and they hoped that the result of the appeal which had been made would enable them to go to election, and put their cases on the pension list. He should like to see the invested funds, which now amounted to 7,000*l.*, greatly increased, but they should go on and do what they could for those who needed help.

Mr. Stephen Collins, M.P., then proposed the toast of "Architects and Surveyors." He said he agreed with a speaker at a previous dinner that architects were the aristocrats of the building trade. If the building was to be a success, and what every architect would like it to be, a thing of beauty if not a joy for ever, it depended upon the architect, and if he made his building a thing of beauty he was entitled to be called the aristocrat of the building trade. He did not think that there could be a greater pleasure in life to an architect than to watch a building grow from the foundation to the topmost stone. In London, architects had great difficulties to contend against; space was limited, and the streets were narrow. In the City, for instance, there were many beautiful buildings hidden in courts and alleys, and one could not stand afar off to see the beauty of them. St. Paul's Cathedral was hemmed in by warehouses, but Sir Christopher Wren desired it to have a great approach from the river, so that people could see it to advantage. London was being rebuilt to a large extent through the efforts of the London County Council, and he believed that the architects of the future would have greater opportunities of exercising their great talents. With the spread of education people were showing a love of the beautiful, and ugly buildings were being got rid of. With the toast he coupled the name of Mr. H. J. Leaning.

Mr. Leaning, in reply, said he was not

an architect, but he could endorse what had been said about that profession. They were men of high ideals, who were worth working for. At the present time there were a good many architects preparing designs for the International Peace Palace at The Hague, and he hoped that an English architect would win the competition. He had seen several of the designs, which were very noble conceptions. Recently a distinct step had been made towards registration, and that was a matter of importance to architects, surveyors, and others, and the attitude of the leading professional body had been so modified that registration was within the region of practical politics. Surveyors appreciated highly the help they received from builders' estimating clerks, and the best surveyors were those who had an opportunity of going through a builder's office and seeing the whole routine and becoming thoroughly acquainted with the state of the market, prices, etc. He felt that a London code of measurement was necessary, and, of course, the support of the builders was necessary in such a movement.

Mr. E. Smith, L.C.C., then proposed "Builders and Building Industries," and said that it might appear an extraordinary thing that the Chairman of the Works Committee of the London County Council should be asked to propose this toast, but really the Chairman of such a committee was the best person to do so, for, having established the principle that it was desirable that there should be direct employment of labour, he felt that there should not of necessity be divisions between the builders of London and the Council, but that they should work in harmony and in a spirit of co-operation for the benefit of the community. In their difficulties with labour, the Council was indebted to the Master Builders' Association for invaluable assistance and advice, and to them they had never appealed in vain. While the Council was always ready to pay due regard to the representations of labour organisations, they refused to be governed and dominated by them, and were always ready to listen to the masters' representations on any subject germane to work they had in hand. There was a spirit of healthy competition between the Council and the builders of London. The Council had nearly 4,000 men working in the Works Department, and his experience had brought him into touch with the great difficulties builders had to contend with. He wished London could be built over again; he felt that it would be rebuilt, and the London County Council had only started upon the work, though a good deal had been done during the last quarter of a century.

Mr F. Higgs, in reply, said he thought that the Chairman had made a good suggestion as to the lifeboat boxes, and he would be glad to have one in his office, and at the end of the year he would add an amount equal to what was in the box. He was delighted to hear what Mr. Smith had said as to the Works Department not being a competitor with builders, though he should hardly have thought that was the case. The department employed 4,000 men, and he would rather have seen those men employed by those whose natural business it was to employ them. He thought the department ought to be members of the Association, as employers of labour, and pay their quota as such, seeing that they took advantage of the work the Association did in regulating trade affairs, etc.

The remaining toasts were:—"The Past-Presidents," proposed by Mr. Alex. Ritchie, J.P., and acknowledged by Mr. J. Carmichael; and "The Merchants and Visitors."

During the evening subscriptions and donations to the amount of about 500*l.* were announced, including 100*l.* from the Chairman, and 10*l.* 10*s.* each from the Institute of Builders, the Worshipful Company of Carpenters, W. Curling Anderson, and Messrs. Trollope & Colls.

COROT EXHIBITION.—The collection of pictures by Corot formed by the late Mr. Staats Forbes will be exhibited at the Leicester Galleries, Leicester-square, for a few weeks from Saturday, March 31, when it will be dispersed. The exhibition will include, in addition to twenty-two examples of Corot's art, a large number of representative pictures by the other painters of the Barbizon school—Daubigny, Diaz, Jacque, Dupré, Rousseau, and Troyon.

THE INCORPORATED INSTITUTE OF BRITISH DECORATORS.

THE annual dinner of this Institute was held on Monday, at "The Trocadero," Piccadilly-circus. Mr. J. D. Crace, President, in the chair. There were also present—Messrs. E. Guy Dawber (President of the Architectural Association), Cole A. Adams, M. Cowtan Cowtan, G. C. Haité, H. T. Hare, F. de Jong, W. Hayward Pitman, J. C. Nicholson, J. Scott, J. Sibthorpe, W. G. Sutherland, J. H. Turner, F. W. Englefield (Secretary), and others.

The loyal toasts having been honoured, Mr. Sutherland proposed the toast of "The British Institute of Decorators." In the course of his remarks, he said that the Institute was proposed by the late Mr. Thomas Bonner at the meeting at Manchester when the National Association of Master House Painters was established, and the aim of the founders was to institute a common meeting-ground of the three National Associations of England, Ireland, and Scotland, and to do work which the National Associations could hardly do, and to carry on educational work in the trade and craft of the decorator. Unfortunately, Mr. Bonner did not live after the establishment of the Institute, and the objects of the promoters had not been quite realised, though the blame for that did not rest with the Council or the officers, but with the members themselves. The progress and status of other institutes and societies was due to the realisation by the members of the capacity which their society gave them to work for themselves. He was afraid that some of the members had a nebulous idea that the Council in London ought to prepare some scheme which, without effort on their part, would confer some unheard-of benefits upon them. That was not the purpose of the Institute, which existed to provide a common ground where the members could meet and discuss questions as to the higher branches of education, etc., which would react on themselves and throughout the country. If the members would not work to this end, the Council could do very little. The aims of the Institute were good, and if members would take advantage of the means which the Institute provided for discussing questions which affected the welfare of the trade, then there would be a larger realisation of the hopes which they set out to accomplish. All great movements of advancement, if permanent, came from within. In Mr. Crace they had a gentleman who was intimately in touch with the practical side of the decorator's craft, and whose knowledge of all the ramifications of it in connexion with art, both past and present, was intimate and profound, and they hoped that he would long serve in his position of President.

Mr. Crace, in response, said he could endorse what had been said as to the objects of the Institute. The Institute existed for and by the members. There was no man who knew much about a subject who could not learn something from someone else. He had to confess that there was not enough individual initiative amongst the members themselves in dealing with questions which affected them. Subjects for consideration should not be limited to the art and craft of decoration; that art had many aspects—the practical, the artistic, and the intellectual, while there were the side issues of chemistry and materials.

The Chairman then proposed "The National Association of Master Painters," consisting of three branches—*i.e.*, for England and Wales, for Scotland, and for Ireland. The Association had grown largely, as the result of the great energy and wholeheartedness of the Secretary, who had organised it and infused life into the whole machinery; and also because it was a means of reinforcing the several legitimate interests from a business point of view. The Association was prospering also, because it had taken up technical and art education for the rising generation of house painters. The Association numbered some 2,000 members, and it was full of activity, and likely to continue for a long time.

Mr. Turner, President of the Association for England and Wales, in response, said that the three branches of the Association were doing good work in the matter of the education of the rising generation of painters, and he considered it the duty of master painters to teach their apprentices and others the art or trade they followed.

Mr. Anderson replied on behalf of the Association for Scotland, and remarked that in his Association they were proposing to establish an exhibition of decorative art in order that the public might see the various adjuncts of the craft and the opportunities there were of making houses more comfortable and more beautiful.

Mr. Sibthorpe, who replied for the Irish Association, said that the reason why the Association had flourished was that it regulated trade relations between masters and their workmen, and as these relations and such a question as apprenticeship were felt to be pressing questions they secured a more ready interest from house painters throughout the country. The higher development of the master was not thought to be such a pressing need, and this, he thought, accounted for the comparative apathy shown in regard to the Institute, but he hoped that in the future the need of the work and influence of the Institute would be more realised.

The Chairman, in proposing the toast of "Architecture and the Arts of Design," said that the Institute had decided to offer medals for the encouragement of colour decoration, and on the reverse side of the medal was the inscription, "Decoration, the handmaid of Architecture," and that really expressed in a few words the real position of decoration. Decorators had a strong obligation to architecture, because the business of the decorator was to learn how to beautify architecture—not by the costly use of colour on some indefinite plan, but by so placing colour that he did the best for the architecture, and no decorator could treat architecture in the right spirit unless he had studied it. The first element of knowing anything about decoration was to know something about architecture. They as decorators were also indebted to other arts of design. Just as the study of architecture was the foundation of decoration, so the production of design in its various artistic forms was the essential of the execution of successful decoration.

Mr. H. T. Hare, who responded for architecture, said that the art of decoration in this country had been most shamefully neglected, and architects felt very much at a loss if they wished to introduce colour into their buildings, and they did not know where to go in order to get suitable suggestions as to the best methods of treating them. Architects themselves had not, as a rule, any definite and clear ideas as to schemes of colour decoration. Whether there was anything in our extraordinary English climate and in the greyness of our skies which militated against any clear conception of proper colour treatment he did not know, but certain it was that in England we had very few examples of successful colour decoration. One of the directions in which the Institute might exercise its useful influence was in the education of the coming generations of decorators, and he gathered that they were instituting prizes, open to the whole country, for the best scheme of decoration of some building or part of a building. That was a very excellent proposal, and he suggested that, if possible, the drawings submitted should be publicly exhibited, for they would be of interest to architects and others. He also suggested that it would be an excellent thing if there should be some sort of condition to the award of the medals as to study and travel. He did not think that any student of decoration could do much good in his studies unless he travelled, for there were very few successful schemes of colour decoration in England. We were gradually coming to a better appreciation of architecture and the fine arts, and the public bodies and private individuals were more or less desirous of getting really good work. The decorator, therefore, should be prepared for more encouragement than he had received in the past. A little while ago he saw an exhibition of drawings and other things in a school of art, where there were some works by painter decorators—some very beautiful examples of graining and marbling, and he was much struck that a school of art should teach such an exploded craft as that of marbling and graining.

Mr. Geo. C. Haité, President of the Society of Designers, in replying for the arts of design, said that the question of design was of the greatest

national importance. It took a great deal of time to get people to realise that architecture was an art, and *the* art. But architecture was never in such a bad condition as design had been from the beginning, and he had tried to raise it from the position it was in, although the success had not been as great as he hoped yet to achieve. Architects were interesting themselves in colour and ornamentation and decoration, and that was a good sign, and also that painters were condescending to know something about decoration. The difficulty about colour decoration was that in this country we rarely ever had two days alike, whereas in Italy and Spain and elsewhere on the Continent we saw colour under the most favourable conditions of light. Moreover, there was the feeling in this country that strong colour would be detrimental to form; but that was a mistake, for strong colour did not destroy form if properly applied. The idea had been to have things in low tone; but what we wanted to get into homes as much as possible was the effect of sunshine, and in a country like England strong schemes of colour were very successful. As to design, the fine arts were the result of commercial prosperity, in which design took a prominent part, and if men were prosperous they bought pictures and decorated their houses. It was to be hoped that the country would see the great importance of design, but he must say that now there seemed to be no encouragement for the designer. There were schools in which good work was done, but was it possible for students to get at these schools that knowledge which came from the association with trades and those who used materials? He thought not, and his solution of the difficulty was that students, when they left the Government and London County Council schools, should go to a school of design, where they would have the tuition of men who had proved themselves to be designers worthy of consideration—men who, without degrading art, supplied the manufacturer and the trade with what was wanted.

The concluding toasts were "Our Guests," proposed by Mr. Pitman, and acknowledged by Mr. Nicholson, and "The Secretary," proposed by the Chairman, and replied to by Mr. Englefield.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Mr. Evan Spicer, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend Battersea Borough Council 2,000*l.* for laying out of a recreation ground; Lewisham Borough Council 15,000*l.* for a street improvement; Mile End Old Town Guardians 1,420*l.* for poor law purposes; and St. Pancras Borough Council 12,100*l.* for electric lighting.

Schools.—The following recommendations of the Education Committee were agreed to:—

"That the resolution of March 14, 1905, so far as it relates to the approval of an estimate and the sanctioning of expenditure in respect of the acquisition of a site for the purpose of enlarging a school for mentally defective children, be rescinded.

That the resolution of March 21, 1905, so far as it relates to the approval of an estimate and the sanctioning of expenditure in respect of the acquisition of a site for the erection of a school for physically defective children, be rescinded.

That the resolution of July 5, 1904, sanctioning the taking over of certain temporary premises, be not further acted upon.

That the estimate of expenditure on capital account of 38,000*l.*, submitted by the Finance Committee, in respect of the acquisition of a site for the provision of the accommodation referred to, together with other similar accommodation and accommodation for children attending ordinary public elementary schools on one site, in lieu of several small sites as previously proposed, be approved."

It was also agreed that the Board of Education be informed that the Council will raise no objection to the proposal of the managers of the St. Charles-square R.C. Training College (Kensington, N.), to provide a new public elementary school for about 200 girls and infants to be used as a practising school in connexion with the college.

Tramways.—The Highways and Improvements Committee recommended, and it was agreed:—

"(*a*) That expenditure, on capital account, not exceeding 23,169*l.* 15*s.* 8*d.*, be sanctioned for the execution of the roadwork and platelaying for the reconstruction and doubling of the existing single line of tramways in Goswell-road, between Clerkenwell-road and Upper Ashby-street, for the underground conduit system of electric traction, and for the execution of the paving works in connexion with the widening of Goswell-road between the points named, being 12,200*l.* for the tramway works, and 10,968*l.* 15*s.* 8*d.* for the street improvement works.

(*b*) That the offer of Dick, Kerr, & Co., Ltd., to execute (i.) the roadwork and platelaying in connection with the reconstruction and doubling of the existing single line of tramways in Goswell-road, between Clerkenwell-road and Upper Ashby-street, for the underground conduit system of electric traction, upon the same schedule of prices and upon the same general conditions as those contained in the contract entered into with the company in pursuance of the resolution of March 6, 1906, for the reconstruction of the tramways from Bloomsbury to Poplar, and (ii.) the paving works in connexion with the widening of Goswell-road, between above-named points, upon a schedule of prices involving a total cost estimated at 10,968*l.* 15*s.* 8*d.*, be accepted."

The Highways Committee also recommended, and it was agreed:—

"(*a*) That expenditure, on capital account, not exceeding 33,000*l.*, be sanctioned for the laying of the cable-ducts required for the electric working of the first section of the Council's northern tramways.

(*b*) That the contract entered into with Messrs. Reid Brothers, as reported on October 10, 1905, for the laying of cable-ducts in connexion with portions of the Council's tramways, be extended so as to include the laying, at a cost not exceeding 33,000*l.*, of the cable-ducts required for the electric working of the first section of the Council's northern tramways."

Bexley Asylum—Repair of Fireproof Ceilings.—The Asylums Committee reported as follows:—

"We have to report that certain fireproof ceilings on the female side at this asylum have been pronounced by the architect of the Council to be dangerous, and that the necessary repairs, estimated to cost 2,750*l.*, have been put in hand. Bexley Asylum was designed and its erection supervised by Mr. G. T. Hine, architect, of 35, Parliament-street, S.W. The contractor for the erection of the superstructure was Mr. Henry Lovatt, and the fireproof ceiling work on the female side was, by permission, sublet to Messrs. Wilkinson & Co. The certificate of completion of the whole building was issued in July, 1900. The ceilings condemned are those of blocks A, B, and C, which were the first blocks occupied. In October, 1900, a deflection of about 2 in. in the fireproof ceiling of A2 dormitory was first reported. This deflection has gradually increased, and we have had reports from time to time from the architect (Mr. Hine), the asylums engineer, the contractor, and sub-contractor. Eventually we thought it advisable to obtain the opinion of the architect of the Council, with the result we have reported. There is considerable divergence of opinion between the architects and the contractor and sub-contractor as to the cause of the deflection, and as to the remedy to be applied."

Aldwych Site.—Mr. Anstruther asked the Chairman of the Improvements Committee whether any action had yet been taken on the minute of the Council passed that day week as to the letting of the central portion of the site at Aldwych which would preclude the further deliberate consideration of the prior offer of M. Gèrard to rent the site?

Lord Monkswell asked whether it was a fact that on December 12 last M. Gèrard's syndicate requested an option to take over the side at 55,000*l.* a year; that on February 13 the same syndicate made a formal offer; that on February 16 the Council's valuer wrote that the Committee was prepared to entertain the proposal; whether, on March 14, Mr. Young, the valuer, wrote to the syndicate to the effect that the Committee had decided to accept an offer from a rival syndicate, and whether the syndicate did not then offer a further 1,500*l.* a year, and, if so, why the rival offer was accepted and the amended offer not considered?

Mr. Hubbard, the Chairman of the Committee, in reply, said he was prepared with a complete answer to the several questions, but, in view of the fact that the letters had been addressed to the Chairman and members of the Council respecting the matter, he would consider it in the interest of the Council that a full report should be brought up next week. Nothing had been done in the matter since last week, further than to instruct the solicitor to prepare an agreement which, so far as he knew, would not be signed until the Committee had had an opportunity of further considering the subject.

The matter accordingly stood adjourned.

The Council adjourned soon after seven o'clock.

PROPOSED NEW THEATRE, SUNDERLAND.—It is proposed to erect a new theatre on a site in Crowtree-road, Sunderland. The plans for the new building have been prepared by Mr. William Hope, architect, Newcastle, and they have been approved by the Sunderland Corporation.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Conversion of Buildings.

St. George, Hanover-square.—The conversion of Nos. 6 and 7, George-street, Hanover-square, into a domestic building (Mr. C. H. Worley for Mr. T. Stevens).—Refusal.

Lines of Frontage and Projections.

Lewisham.—Buildings on the northern side of Stanstead-road and western side of Ravensbourne-road, Lewisham (Messrs. Norfolk & Prior for Mr. J. Watt).—Consent.

Finsbury, Central.—That the application of Mr. T. H. Watson for an extension of the periods within which the erection of buildings at Nos. 2 to 5, White Lion-street, Pentonville, was required to be commenced be granted.—Consent.

Kennington.—That the application of Mr. F. A. Powell for an extension of the periods within which the erection of an institute building for the Beaufoy Charity, on the site of Nos. 65 to 71 (inclusive), and of eight houses on the site of Nos. 56 to 64 (inclusive), Princes-road, Kennington, was required to be commenced and completed, be granted.—Consent.

Lewisham.—That the application of Mr. W. Stephens for an extension of the periods within which the erection of a building on a site abutting upon the east side of High-street and north side of Limes-grove, Lewisham was required to be commenced, and completed, be granted.—Consent.

Marylebone, West.—A projecting oriel window in front of No. 16, James-street, St. Marylebone (Messrs. Forsyth & Maule for Mr. H. Friedeberg).—Consent.

Whitechapel.—Additions in front of Nos. 49, 51, 53, and 55, Mansell-street, Whitechapel (Messrs. Selby & Kislingbury for Mr. S. Harris).—Consent.

Clapham.—That the Council do consent to the application of Mr. E. S. Barr on behalf of Messrs. Hillier & Parker, for an extension of the periods within which the erection of a two-story building on land at the rear of Nos. 20, 22, 24, and 26, St. John's road, Battersea, was required to be commenced, and for a deviation from the plan approved, so far as relates to the erection of an addition on the eastern side of the building.—Consent.

Brixton.—An iron structure upon the forecourt of No. 205, Clapham-road, Brixton (Mr. J. H. Doughty).—Consent.

St. Pancras, South.—Construction of underground cellarage in the forecourt of No. 13, Euston-road, St. Pancras, and to a deviation from the plan approved for the construction of underground cellarage in the forecourts of Nos. 15, 17, 19, and 21, Euston-road, St. Pancras, so far as relates to the omission of the steps in front of No. 15, Euston-road (Mr. W. Flockhart for Dr. Pavy).—Consent.

St. Pancras, West.—A conservatory over the porch in front of No. 3, Albert-road, Regent's-park (Mr. E. C. Macpherson for Mrs. Desmond).—Consent.

Wandsworth.—A horticultural show-house on the western side of Trinity-road, Wandsworth, to abut upon Magdalen-road (Mr. A. Southam for Mr. R. Neal).—Consent.

Wandsworth.—(*a*) That the resolution of January 23, consenting to the erection and retention of houses on the east side of Garratt-lane and west side of Tranmere-road, Wandsworth, be rescinded. (*b*) Erection of three houses, and the retention of nine houses, on the east side of Garratt-lane, Wandsworth, between Quinton-street and Littleton-street, and the retention of a house on the west side of Tranmere-road, abutting upon Quinton-street (Messrs. Holloway Brothers).—Consent.

Woolwich.—Bay windows in front of Nos. 9 and 11, Glenshiel-road, Eltham (Mr. J. J. Bassett for Mr. A. Cameron Corbett).—Consent.

Chelsea.—An addition at the western end of Christ Church, Christ Church-street, Chelsea (for the Rev. J. P. Thompson).—Consent.

Clapham.—Projecting balconies at the southern end of the ward block of the Bolingbroke Hospital, Wandsworth Common, to abut upon Belleville-road (Messrs. Young & Hall for the Council of the Bolingbroke Hospital).—Refusal.

Width of Way.

Southwark, West.—A building on the southern side of Webber-street, Southwark, to abut upon Barron's-place, and to exceed in height the width of that street (Mr. A. E. Chasemore for Mr. Sumption).—Consent.

Whitechapel.—An addition to the London Hospital, Whitechapel-road, Whitechapel, at less than the prescribed distance from the centre of the roadway of East Mount-street (Mr. R. Plumbe for the Committee of the London Hospital).—Consent.

Projections and Construction.

Southwark, West.—Two external iron gangways

over the roadway of Pump-court to connect Nos. 114 to 118, with Nos. 120 to 128, Union-street, Southwark, at the second floor and roof levels, and two iron balconies and two iron ladders at the rear of Nos. 114 to 118, Union-street (Mr. R. J. Lovell for the General Electric Company, Ltd.)—Consent.

Line of Frontage and Space at Rear.

Chelsea.—An addition at the rear of No. 57, Cadogan-gardens, Chelsea, to abut on Draycott place (Mr. G. L. Wilson for Mr. P. Holland).—Consent.

Hammersmith.—Retention of a greenhouse in front of No. 229, King-street, Hammersmith (Mr. L. G. Brumby for Mr. T. Grant).—Consent.

Deviation From Approved Plan.

Strand.—Deviation from the plans approved in connexion with the rebuilding of No. 32, Rupert-street, and No. 6, Upper Rupert-street, St. James, so far as relates to an alteration in the position of an air duct (Mr. R. H. Kerr).—Consent.

Buildings for the Supply of Electricity.

Hammersmith.—That the Council do approve the drawings submitted by the Kensington and Notting Hill Electric Lighting Companies, showing the details of the construction of the bunkers and other steelwork in connexion with the proposed erection of a generating-station on a site eastward of the generating station of the Central London Railway Company, and approached from Wood-lane, Hammersmith.—Consent.

Southwark, West.—Additions to the western power house of the Sumner-street and Bankside generating station, Southwark (City of London Electric Lighting Co., Ltd.)—Consent.

Formation of Streets.

Lewisham.†—That an order be issued to Mr. A. W. Osborn, sanctioning the formation or laying out of a new street for carriage traffic on the Summerfield estate, Catford, to lead from Ravensbourne-park-road to Ravensbourne-park, and in connexion therewith the widening of portions of Ravensbourne-park-road and Ravensbourne-park (for Mr. J. Watt).—Consent.

Hampstead.—A deviation from the plans approved for the formation of Glenilla-street and Howitt-road (late Howitt-street), Hampstead, so far as relates to an alteration in portions of the boundaries of the said streets (Mr. C. J. Bentley for Mr. J. C. Hill).—Consent.

Space at Rear and Alteration of Building.

Paddington, South.—An addition on the half landing between the first and second floors at the rear of No. 43, Cambridge-street, Hyde-park-square (Messrs. Thurgate & Cope for Mr. J. Asher).—Refused.

Alteration of Building.

Paddington, North.—The uniting of No. 31, Westbourne-terrace with No. 19, Craven-road, Paddington, by an opening at the first floor level (Messrs. Macey & Sons, Ltd.).—Consent.

The recommendation marked † is contrary to the views of the local authorities.

Architectural Societies.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY. — At a meeting of this Society on Thursday, the 22nd inst., Mr. W. H. White read a paper on "Modern Town-house Architecture," Mr. G. B. Balmer in the chair. The lecturer said:—"I had occasion some time ago to look up a great many illustrations of old and modern town-houses, and I found it very interesting to trace the development of the town-house, both externally and internally; but what particularly struck me in studying the exterior designs of most modern town-houses was the utter absence of 'consistency' as to style. As compared with old work, I could not help noticing the 'restlessness' of our modern work; indeed, it seems to me to be the key-note of modern architecture, as it is of our everyday life. I shall show you a series of views which I hope you will find interesting, and which will serve to give point to my remarks—at the same time please remember that most of the slides represent 'picked' work of its kind. The town-house may not, I fear, prove a very interesting subject to your members, as I do not suppose you have to meet quite the same conditions here in Leeds that we have in London, but I thought that it might be of some interest to you to know how such problems are dealt with by your brother professionals in London. With regard to the planning, there are a few characteristics I should like to mention, the chief of which is the relation of the hall and staircase to the rest of the plan; this point settles to a great extent the whole scheme of the house. Assuming, for example, the case of an ordinary good-class town-house, with a frontage of from 22 ft. to 30 ft., and (according to position) of a rental value from 300*l.* to 500*l.* per annum, the accommodation required would be dining-room, library, and morning-room upon the ground floor, drawing-rooms and boudoir upon the first floor, and some eight or ten bed and dressing rooms, two or three bath-rooms, a well-arranged basement with all the necessary offices, service lifts, a good hall and staircase, and, if possible, a back staircase, and, to be quite up to date, an electric passenger lift. The first point to be considered is the position of the hall and staircase. If 'double' drawing-rooms are required on the first floor the staircase must be at the side of the middle room. There is no doubt that what has been termed the hall-sitting-room adds greatly to the attractions of a house if sufficient space can be afforded. Wherever possible, a second or back staircase is very desirable, and in houses of more than three square stories a passenger lift adds greatly to the attractiveness of the house; it should, however, be arranged so that it can be used without a special attendant. The position of the kitchen must be carefully considered in relation to the staircases and service lifts. As to the upper floors, in addition to good bedrooms, dressing-rooms will be required on the second and third floors; these should be so planned that they can be used as additional bedrooms, and there should be a bath-room and water-closet upon each bedroom floor. It should not be forgotten that the basement is not the least important part of the house, for upon its satisfactory arrangement depends, to a great extent, its economical working and the comfort of its inmates. No part of a house will pay better for able planning, as if badly arranged the comfort of the occupiers must certainly be lessened, and an abnormal staff of servants required. It is obvious that the planning and fitting up of a good class town-house is a more complex problem than formerly, and requires expert knowledge on the part of the architect." The lecture was illustrated by lantern slides.

The following officers were elected for the ensuing session: — President — Mr. H. S. Chorley, M.A. (A.); Vice-Presidents — Messrs. P. Robinson (F.) and S. D. Kitson, M.A.; Hon. Treasurer—Mr. G. F. Bowman; Hon. Librarian—Mr. F. Musto (A.); Hon. Secretary—Mr. A. E. Kirk (A.); Members of Council—Messrs. W. G. Smithson (A.), F. E. P. Edwards (F.), C. B. Howdill (A.), H. A. Chapman (A.), A. R. Hill (A.), and G. E. Reason (Assoc. Member).

SHEFFIELD SOCIETY OF ARCHITECTS.—A meeting of the Sheffield Society of Architects and Surveyors was held on the 22nd inst., when Mr. H. L. Paterson delivered a lecture on "English Renaissance, 1750 to 1800." The lecturer said that this period was considered by some to be the closing one of the Renaissance, and by others the commencement of strictly modern architecture. It has been vigorously denounced by the leaders of the Gothic revival last century, and it was almost universally held to be the period of the Renaissance least worthy of study. There was, however, no doubt about the high estimation in which it was held at the time; architects and public were agreed in regarding it as the greatest architectural age since the days of Imperial Rome. The principles of that architecture as interpreted by Palladio and others were considered binding for all time, and no further development was desirable. Mediæval architecture was almost ignored, although Chambers expressed great admiration for it, without, however, taking any steps to revive it. Chambers was the most cultured exponent of the style and the most worthy of study, but his violent prejudice against Greek detracted somewhat from the value of his counsels. The latter half of the XVIIIth century was a period of great national prosperity, in spite of the wars and revolutions that involved nearly the whole of Europe. Many of our finest mansions were erected or remodelled, and much of the work was in the hands of a small number of architects. The order was essentially the basis of design in this period, and dominated not only the elevations but the plans. To obtain a dignified external order people were willing to sacrifice internal convenience. The type of house which had already been developed, and of which Castle Howard, Fonthill, and others were examples, gave place towards the end of the century to the self-contained plan of the brothers Adam and others. Slides were shown illustrative of the different types. The treatment of interiors was next touched upon, and the introduction of the Adam style of decoration illustrated. One of the main features of this period was the great attention paid to street design, notably in the West-end of London, in Edinburgh, and in Bath. In Bath the development of the city, which had been largely in the hands of Wood, senr., was continued by his son. The works of Wood, junr., were then illustrated, and the architecture of the new town of Edinburgh, and it was stated that both in the planning of the city as well as in the style of architecture, Edinburgh and Bath had much in common. The treatment of gardens was referred to, and it was stated that the landscape garden had almost entirely taken the place of the old formal garden, and that a great feature was made of the casinos, temples, and ornamental bridges. At the close of the century the Greek influence was making itself felt in design, and soon outstripped in popularity the XVIIIth century style. The style of Chambers, however, continued to be used throughout the whole of the Greek revival, and even through the Gothic revival down to the present time. The lecturer concluded by claiming for the latter Renaissance style generally an adaptability to almost all classes of buildings, and pointed out that whatever was the fashion in architecture this style never lost its charm, if reasonably handled, and that it was the architecture of the greater part of the civilised world. Slides were lent by Mr. Mowbray A. Green, by the London Architectural Association, and Mr. J. R. Wigfull. At the conclusion of the lecture a vote of thanks was accorded to Mr. Paterson, on the proposition of Mr. A. E. Turnell, seconded by Mr. C. Riddey, and supported by Messrs. E. M. Gibbs, T. W. Green, J. R. Wigfull, and Mr. J. B. Mitchell-Withers (the Chairman).

Archæological Societies.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—A meeting was held on Wednesday, March 21, the Hon. Treasurer, Mr. R. H. Forster, in the chair, when the Rev. Henry Cart, who was appointed by the Council to represent the Association at the recent International Archæological Congress at Athens, gave a very interesting account of the Congress. The success of the Congress was attributable in a large degree to the great interest taken in its proceedings by the King, Queen, and Royal Family of Greece, most of whom attended the daily meetings and readings of papers, while the Crown Prince made an ideal chairman. A large number of photographic views of events and scenes of the meetings were exhibited by lantern light, and many charmingly artistic ones, taken by Mr. Cart himself, of places in the interior and other parts of Greece which he visited after the Congress, particularly the celebrated Vale of Tempe, Corinth, Salonica, etc., were greatly admired. The Rev. W. S. Lach-Szyrma, Mr. Emanuel Green, Mr. Gould, the Chairman, and others took part in the discussion which followed. In answer to an inquiry, Mr. Cart said he was glad to be able to assure the meeting that at the Congress it was decided that the talked-of restoration of the Parthenon should not be attempted.

Competitions.

BUILDINGS FOR THE INSTITUTION OF ENGINEERS AND SHIPBUILDERS, GLASGOW. — Forty-three competitive designs have been received by the Institution of Engineers and Shipbuilders in Scotland in connexion with the erection of their new buildings at the corner of Elmbank-street and Elmbank-crescent, Glasgow. The successful design is by Mr. J. B. Wilson, architect, 92, Bath-street, Glasgow.

ST. PANCRAS CENTRAL LIBRARY. — The Libraries Committee of St. Pancras Borough Council reported on Tuesday having considered and approved of the conditions

prepared by the assessor for the guidance of the competing architects for the Central Public Library.

Books.

The Encyclopædia of Practical Engineering and Allied Trades. Edited by JOSEPH G. HORNER, A.M.I.Mech.E. London: Virtue & Co.; Vols. 1 and 2.

THERE is certainly an opening for a work of the kind foreshadowed by the first two volumes of this encyclopædia, which is announced as intended to cover "the entire practice of civil and mechanical engineering." No mention is made of electrical engineering in the title-page or preface, but examination of the text shows that this important branch of engineering has received a fair share of attention. Bearing in mind the numerous subdivisions of modern engineering practice and the different educational requirements of those connected with the same subdivisions of the subject, it is scarcely to be anticipated that anything like exhaustive treatment will be found in the present publication. Judging by the two volumes we have received, the editor has decided to give prominence to the needs of those who follow engineering as a trade, in contradistinction to others who make it a profession. Mechanical engineering in its practical aspect is undoubtedly the most prominent feature of the new encyclopædia, although, so far as the letters A and B have been treated, civil and electrical engineering, metallurgy, physical science, engineering chemistry, and mathematics are by no means neglected. Still, the true value of the work is to be found in the articles dealing with the strictly practical side of mechanical engineering. These contributions have evidently been written by men thoroughly familiar with the department of work discussed, and one excellent characteristic is that mechanics and others will be able to glean useful information relative to operations in which they are not actually engaged and of which, owing to modern methods of specialisation, they have few opportunities of gaining knowledge and familiarity. Thus the pattern-maker and the iron-moulder, the smith and the turner, will each be enabled to learn something of the work conducted in departments other than their own, and draughtsmen will be able to obtain some hints respecting workshop practice. In those subjects which are beyond the boundaries of mechanical engineering the treatment is less detailed, and in one or two articles may be described as popular rather than technical. So far as publication has proceeded, a few of the subjects appear to be inadequately discussed, but we understand that the articles will be supplemented by others in the remaining volumes, so that by the aid of cross references the reader may be able to fill up the gaps now apparent. Taken as a whole, the two volumes contain much useful and well-selected information, carefully arranged and concisely expressed. The illustrations are exceptionally good, most of them having been reproduced from drawings specially prepared for the purpose of the work.

Modern Milling Machines, their Design, Construction, and Working. By JOSEPH G. HORNER, A.M.I.Mech.E. With 269 illustrations. London: Crosby Lockwood & Son. 1906.

MR. HORNER gives in this book detailed consideration to a single department of workshop practice, but one which has developed in a remarkable manner during the past twenty years. At one time looked upon with disfavour by some engineers, the milling machine is now extensively employed for work of almost every kind. Its general use practically dates from the introduction of emery wheels, without which it would be impossible to grind the milling cutters. Although milling machines are particularly suitable for specialised methods of manufacture, it would be a mistake to suppose that they are not equally useful in shops where work of general character is undertaken. Consequently the subject-matter of this book has more extended application than might be assumed after mere inspection of the title. Mr. Horner has treated the subject in exhaustive manner, and the illustrations are admirable, consisting largely of reproductions from actual drawings. His treatise is not one for people who merely desire general knowledge, but forms a special study, appealing to practical men and engineering students. The brevity of this notice must not be attributed to lack of appreciation for a most excellent book, but to the demands on our space by matters more directly associated with architectural and constructional practice.

Martin's Up-to-date Tables of Imperial, Metric, Indian, and Colonial Weights and Measures. By ALFRED J. MARTIN, F.S.I. London: T. Fisher Unwin; 1904.

IN view of the controversy which has arisen with regard to the proposed adoption of the metric system in the United Kingdom, this book will be of service to those who are interested in the subject, as well as to others having occasion to employ tables of various kinds that are not published in all works of reference. Mr. Martin's work is only incidentally a table-book, for in Part I. the author has concerned himself chiefly with the task of showing the inconsistencies of the British system, and of formulating proposals for the decimalisation of British units. Briefly stated, his views are that by bringing our system of weights and measures into line with those of other countries we shall derive direct benefit, besides contributing in a most material manner to the consummation of that desideratum—a universal medium of arithmetical expression in commerce. Part II. contains a collection of miscellaneous tables and data, and the volume is provided with a very complete index, which enables the user to pick out any required particulars from the argumentative portion of the manual.

BOOKS RECEIVED.

SHIPPING MARKS ON TIMBER. 1906 Edition. (W. Rider & Son. 7s. 6d.)

LAND AND HOUSE PROPERTY YEAR BOOK FOR 1905. (*Estates Gazette* Office. 7s. 6d.)

THE MODERN HOME. By W. Bidlake, Halsey Ricardo, and John Cash. Edited by W. Shaw Sparrow. (Hodder & Stoughton. Editions at 5s., 7s. 6d., and 21s.)

Trade Catalogues.

WE have received from the General Electric Company, of Queen Victoria-street, a leaflet announcing that the price of their well-known "Geeko" ignition accumulators has been considerably reduced. These accumulators can be used in motor-cars and launches, and for stationary engines. They have also sent us a leaflet describing a novel direct working telephone, an insulated hand-lamp, which is stated to be thoroughly trustworthy, a novel form of cover for a Nernst lamp, etc. The bracket-holder for an electric lamp, or the "bracket fitment," as it is called in this leaflet, is distinctly novel. Any bracket to which it may be attached can be easily taken down at once for cleaning or other purposes.

Messrs. Waygood & Co. send us two new catalogues—one an eight-page list relating to their specialties in general, but giving prominence to electric lifts for motor-car factories and garages, while the other is a circular containing particulars of the latest novelty represented by the introduction of lifts into ocean steamships. Considering that vessels such as the great liners virtually reproduce the essential features of a large hotel, it is only natural that they should be furnished with similar conveniences. The popularity of the lift installed by Messrs. Waygood & Co. on the *Amerika* may be gauged by the fact that during the first voyage of this vessel the lift made 2,154 journeys and carried 4,469 passengers.

Messrs. A. Ransome & Co., of Newark, send us their catalogue of sawmill accessories, such as tend to increase the efficiency and profit-earning capacity of the machinery to which they are applied. Many of the auxiliaries described and illustrated in this book are not infrequently omitted from specifications of sawmill plant, and are generally ordered from time to time as suggested by the practical experience of the manager This is evidently not the best way of furnishing a mill, and the publication of the present catalogue should assist prospective sawmill proprietors to obtain thoroughly efficient plant at the outset, and be of use to those who desire to complete their equipment by the addition of the most modern appliances. The catalogue also includes particulars of wood-trimming machines, glue-heaters, saw guides and guards, and various apparatus useful in the wood-working industry.

Fifty Years Ago.

FROM THE *Builder* OF MARCH 29, 1856.

ALUMINIUM AND THE ELECTRIC LIGHT.

THE new metal which excited so much attention lately as a hopeful cheap substitute for silver, has by no means fulfilled the public expectation as yet, mainly from the cost of its production. Still, however, the endeavour to economise the means of its evolution from clay-proper or alumina is being persisted in, and the desire to produce it at a moderate cost has already contributed much towards the cheapening of the previous processes, whereby other metalloidal substances, particularly sodium, required to be evolved from their alkaline or earthy oxides. A new step has just been made at Lyons, by Messrs. Lacassagne & Sheers, who have invented a galvanic battery, in which the usual fluids are replaced by anhydrous salts in a state of igneous fusion, and by means of which alumina is reduced into aluminium, while the electric light is evolved in the course of the process. The inventors are also trying their hand at the regulation or steadying of the electric light. M. St. Clair Deville, we observe, has been assisting at a lecture on the subject of aluminium at the London Royal Institution.

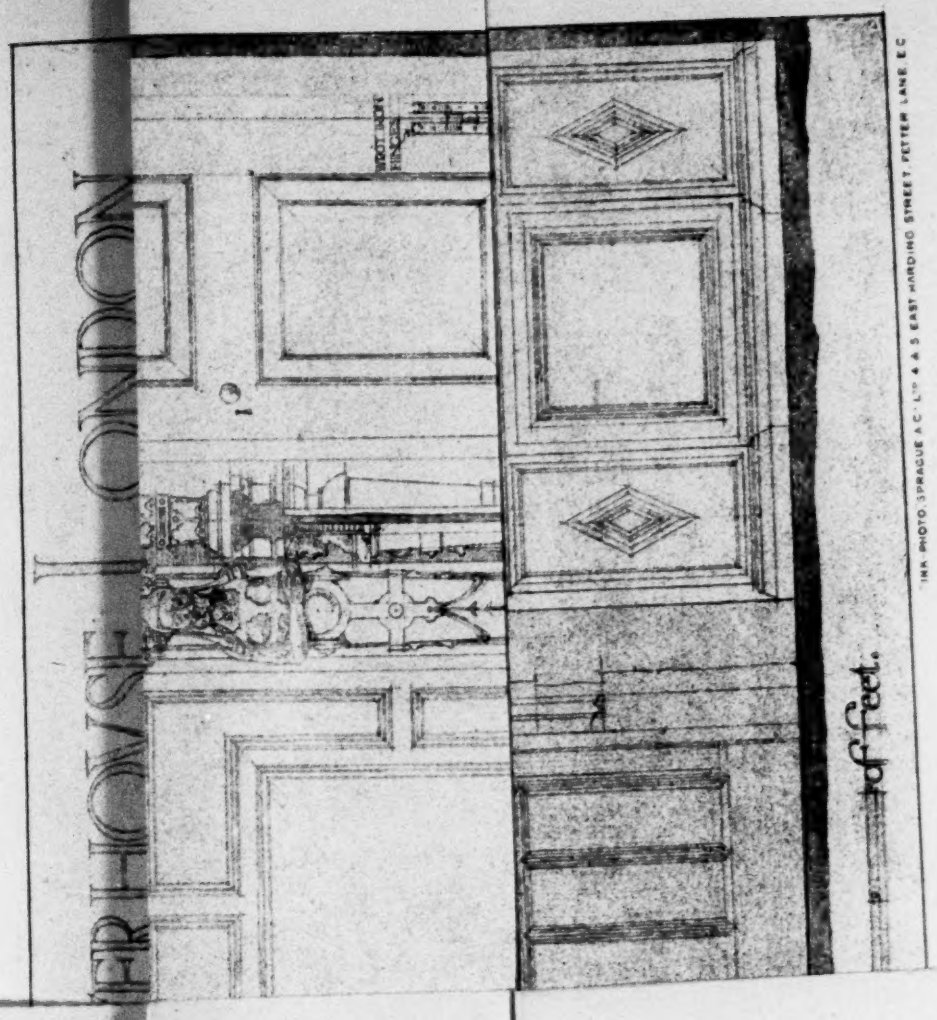
Illustrations.

THE CHARTERHOUSE HALL.

THIS old "Gueston" Hall of the Charterhouse seems to have been built about the year 1500, and, although of so late a period of Gothic, the mouldings to the window-jambs are of considerable beauty, the oak-work, however, excepting a few remaining portions of the old monastic panelling, was added by the Duke of Norfolk, who, long after its disuse as a monastic building, made the Charterhouse his London residence between 1555 and 1571; he entirely transformed the hall, raising the walls and adding the top tier of lights and the rather interesting roof, which is of hammer-beam construction, with a plaster core down the centre, divided into panels with oak ribs. Very beautifully-carved pendants hang from the trusses, which spring from moulded stone corbels projecting from the walls.

The screen, which is dated 1571, was also built by the Duke of Norfolk, and is of Italian character, although probably of English workmanship; it originally extended the entire width of the hall, the narrow side gallery being constructed at a somewhat later date for the purpose of connecting up the great staircase with the westernmost chambers of the building. This addition involved the removal of the end caryatid and panel, and shifting the console above one of the capitals, so that the next caryatid which it carries should stand clear of the gallery, an alteration which sadly affects the appearance of the whole; the upper panels of the screen are removable, so that the space behind could be used as a minstrels' gallery as well as a passage. The carving, on the whole, is of good design and workmanship, notably the fine lion-headed consoles over the archways, the frieze above with its interlacing strapwork and delicately-designed cartouches; the interesting capitals are also well done, and worth notice. The caryatides are of unusual character, and each is represented carrying a huge bunch of fruit upon its head.

The screen, being placed at the western end of the hall, forms the approach to the monastic butteries and kitchens, while at the opposite end is the very fine door which originally led to the prior's lodgings. The floor is modern, but still retains the raised daïs at the eastern end; there is also the usual bay window found in halls of this period. The panelling, which is delicately moulded, is of the same date as the screen,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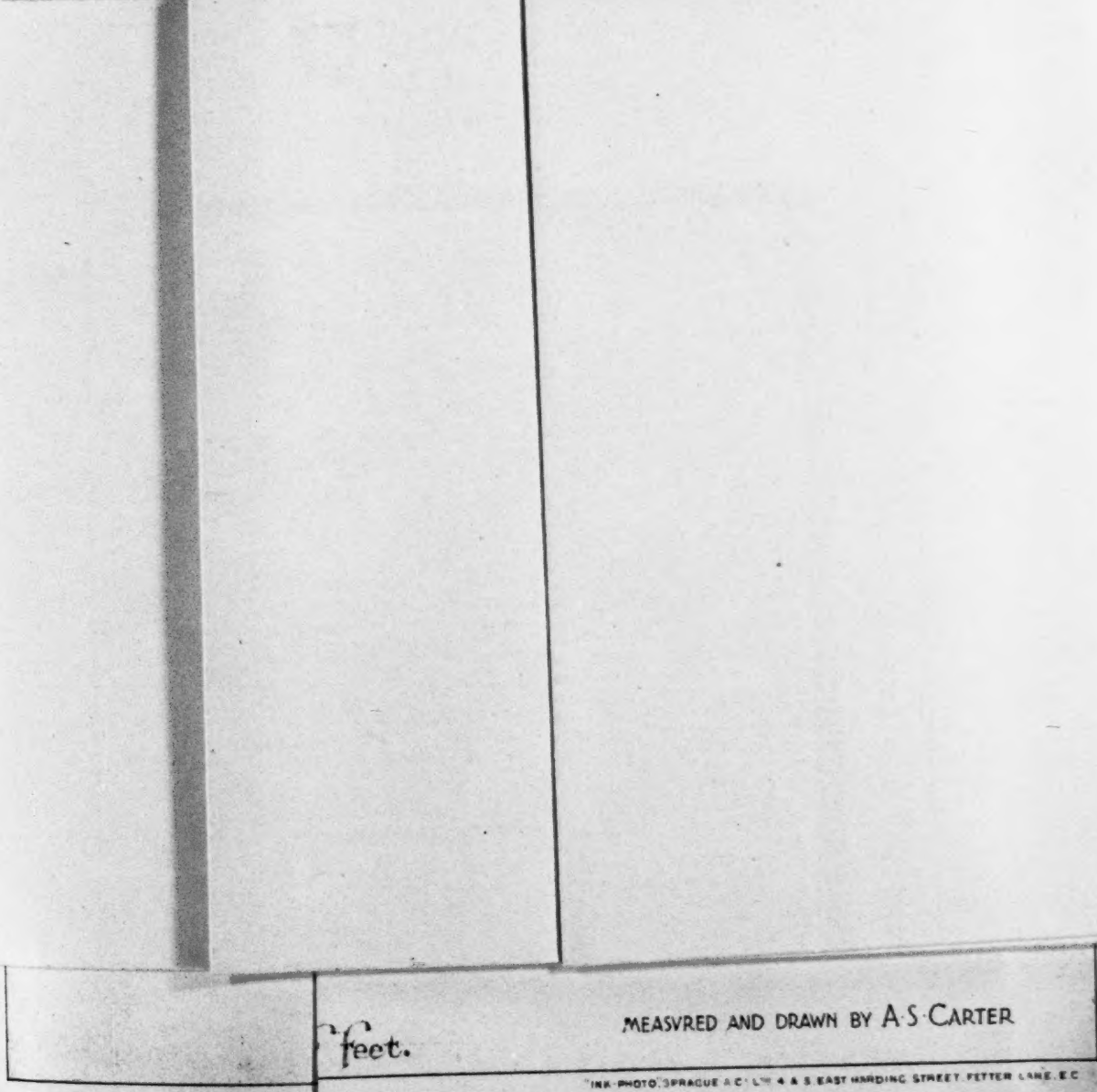
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MEASVRED AND DRAWN BY A·S·CARTER
INK-PHOTO SPRAGUE & C° L™ 4 & 5 EAST HARDING STREET, FETTER LANE, E.C

OAK SCREEN IN HALL OF THE CHARTERHOUSE LONDON.

MEASVRED AND DRAWN BY A·S·CARTER·

The Screen dated 1571 was erected with other alterations to the Hall by the Duke of Norfolk, who made the Charterhouse his London residence from 1565 until he was beheaded in 1572. It originally extended the whole width of the Hall, the narrow side gallery is a later addition, and was constructed for the purpose of connecting the great staircase with the westernmost chambers of the building, this addition involved the removal of the end Caryatide and panel, and shifting the console above one of the capitals so that the next Caryatide which it carries should stand clear of the gallery. The upper panels of the screen are removable, so that the space behind might be used as a minstrels gallery as well as a passage.

OAK RIB

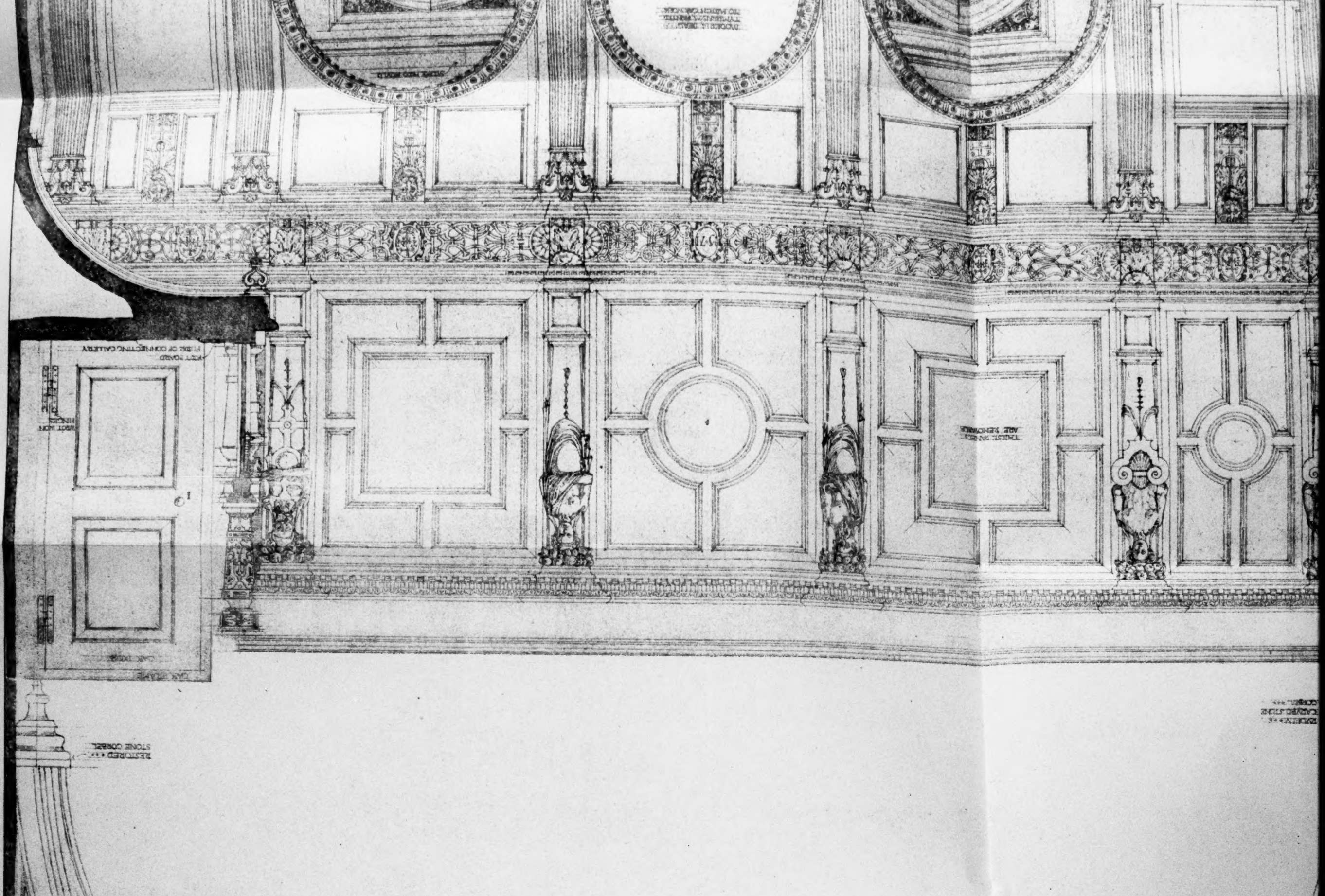
OAK MOULDING

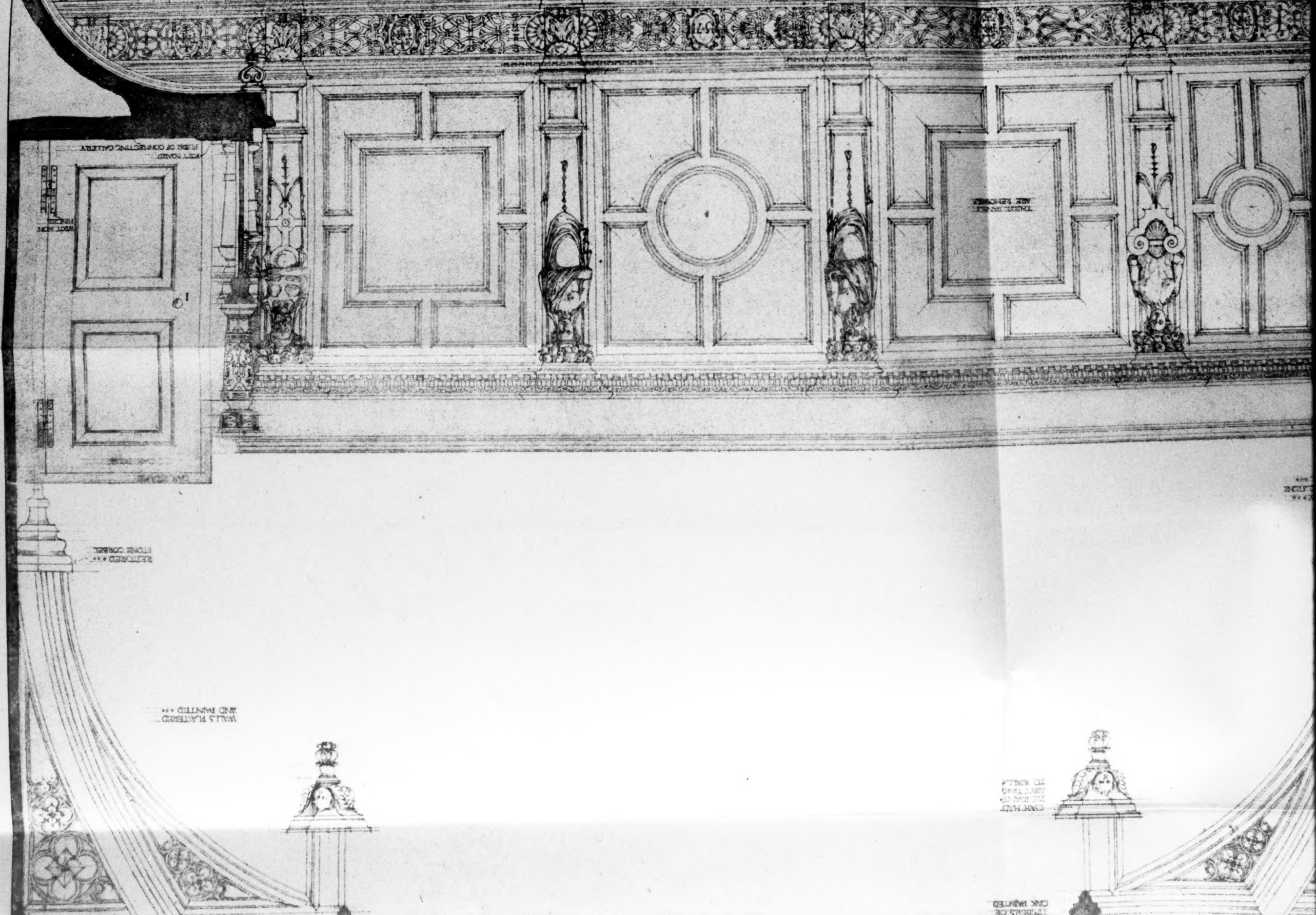
PLASTER COVE CEILING

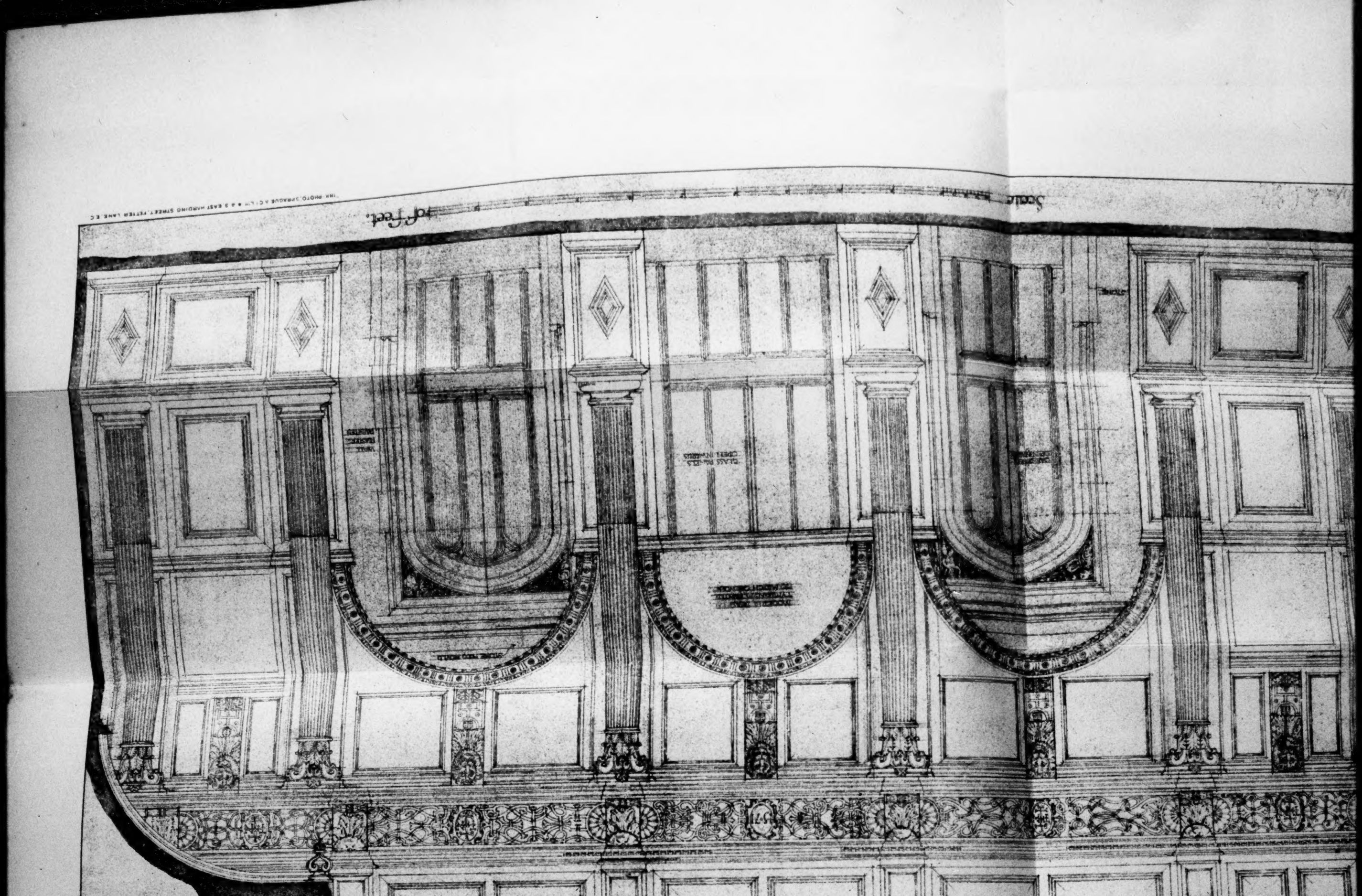
TIMBERS OF OAK PAINTED

OAK HALF PENDANTS ABUTTING TO WALLS

WALLS PLASTERED AND PAINTED







OAK SCREEN IN HALL OF THE CHARTERHOUSE LON

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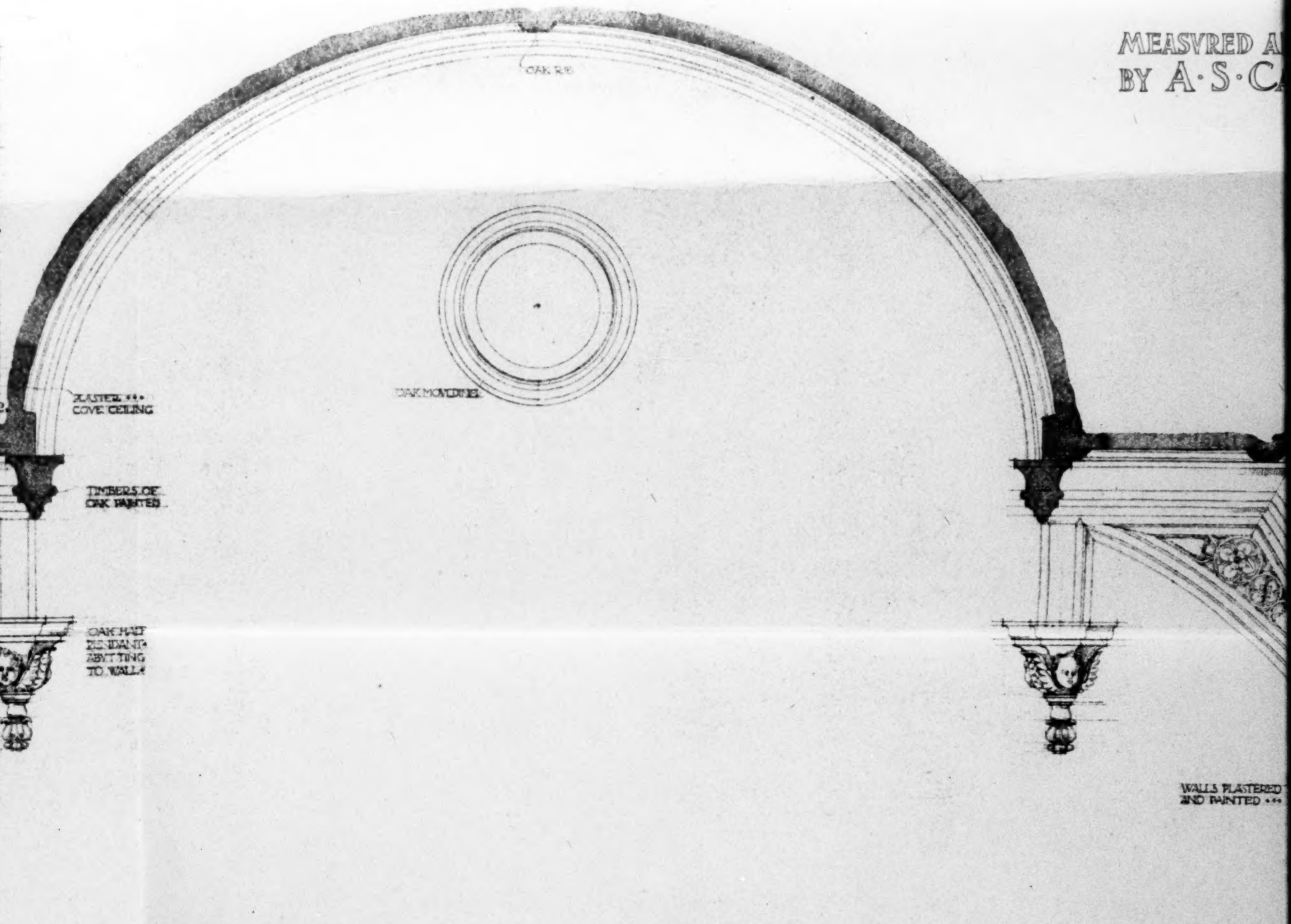

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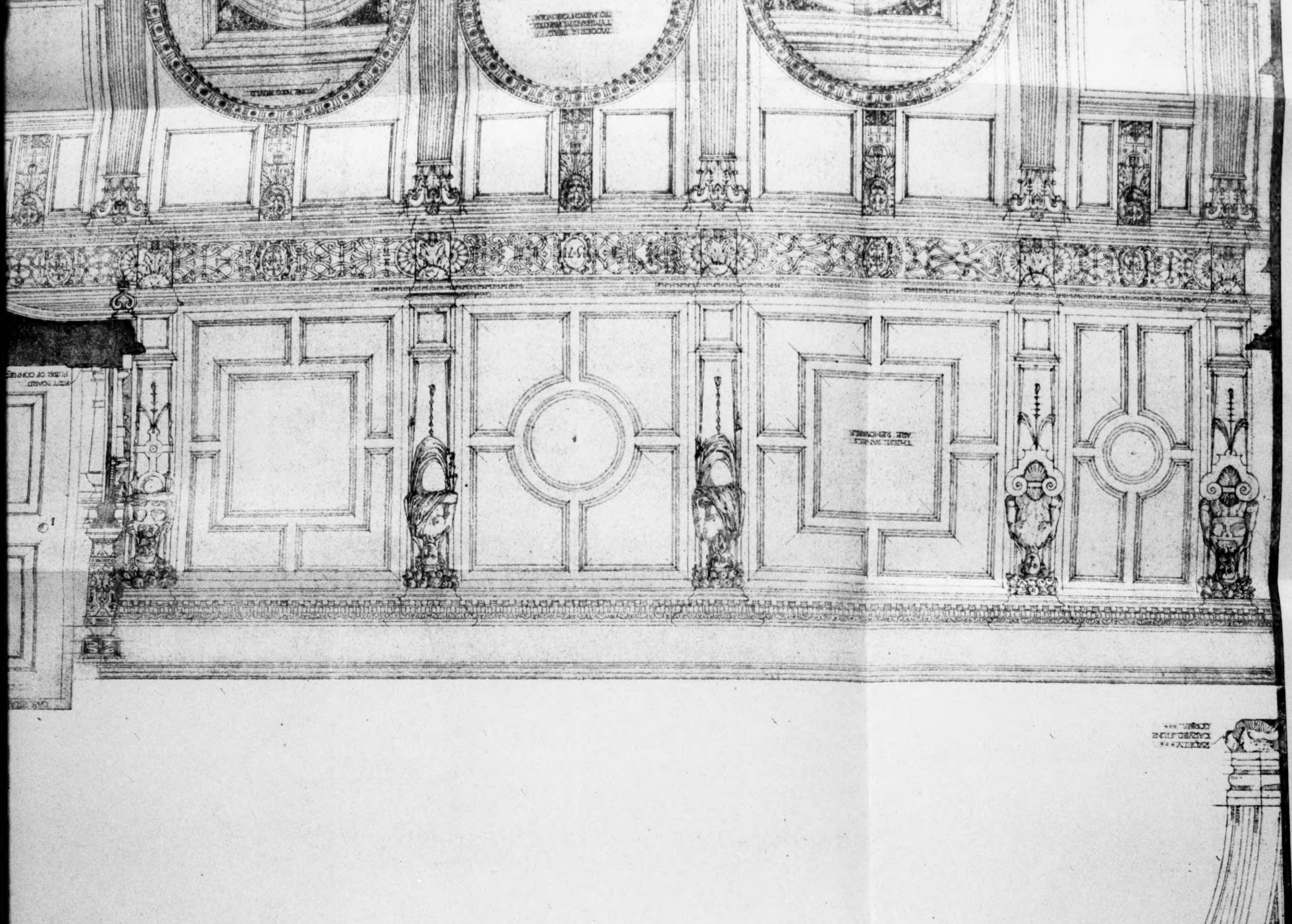

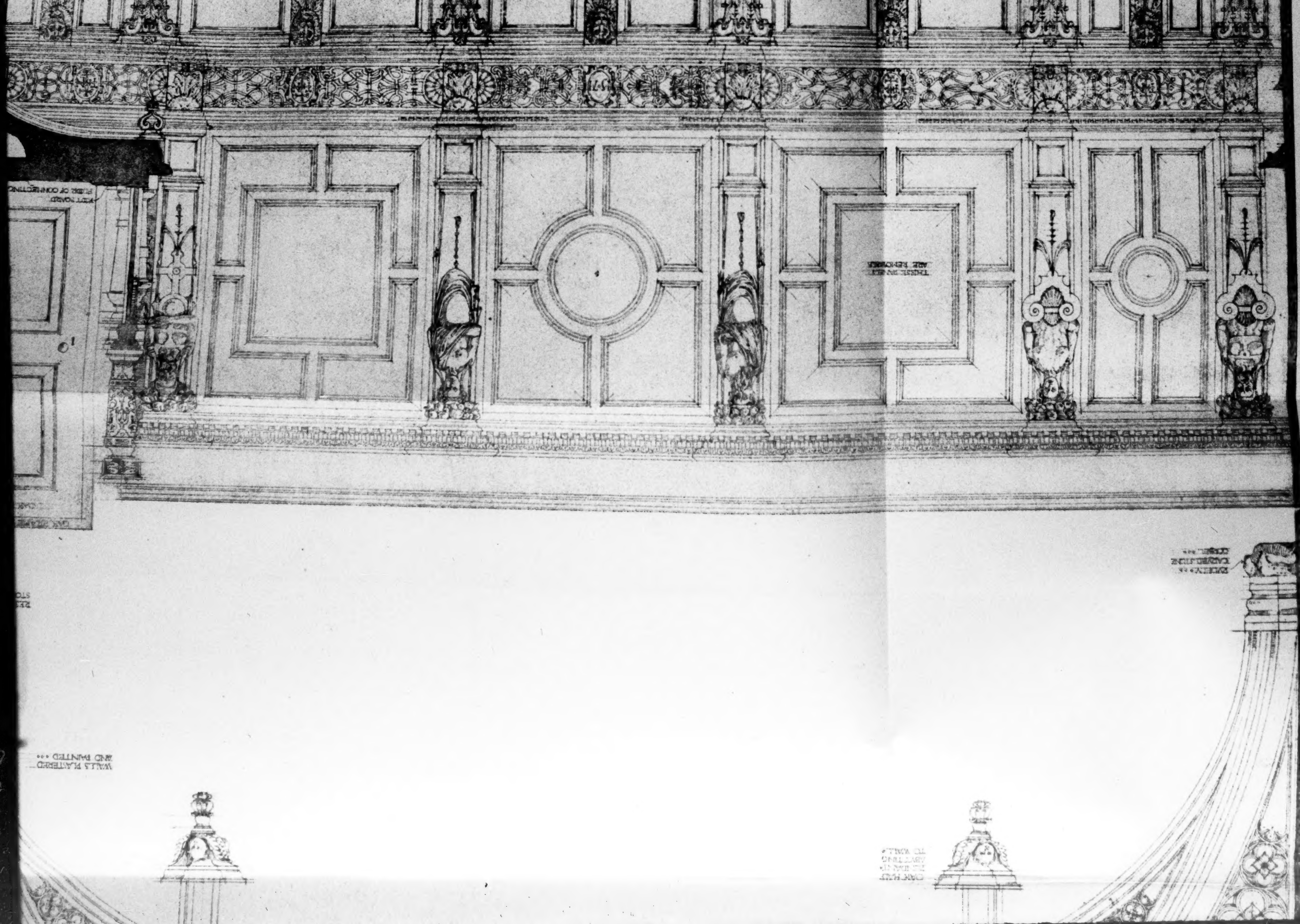

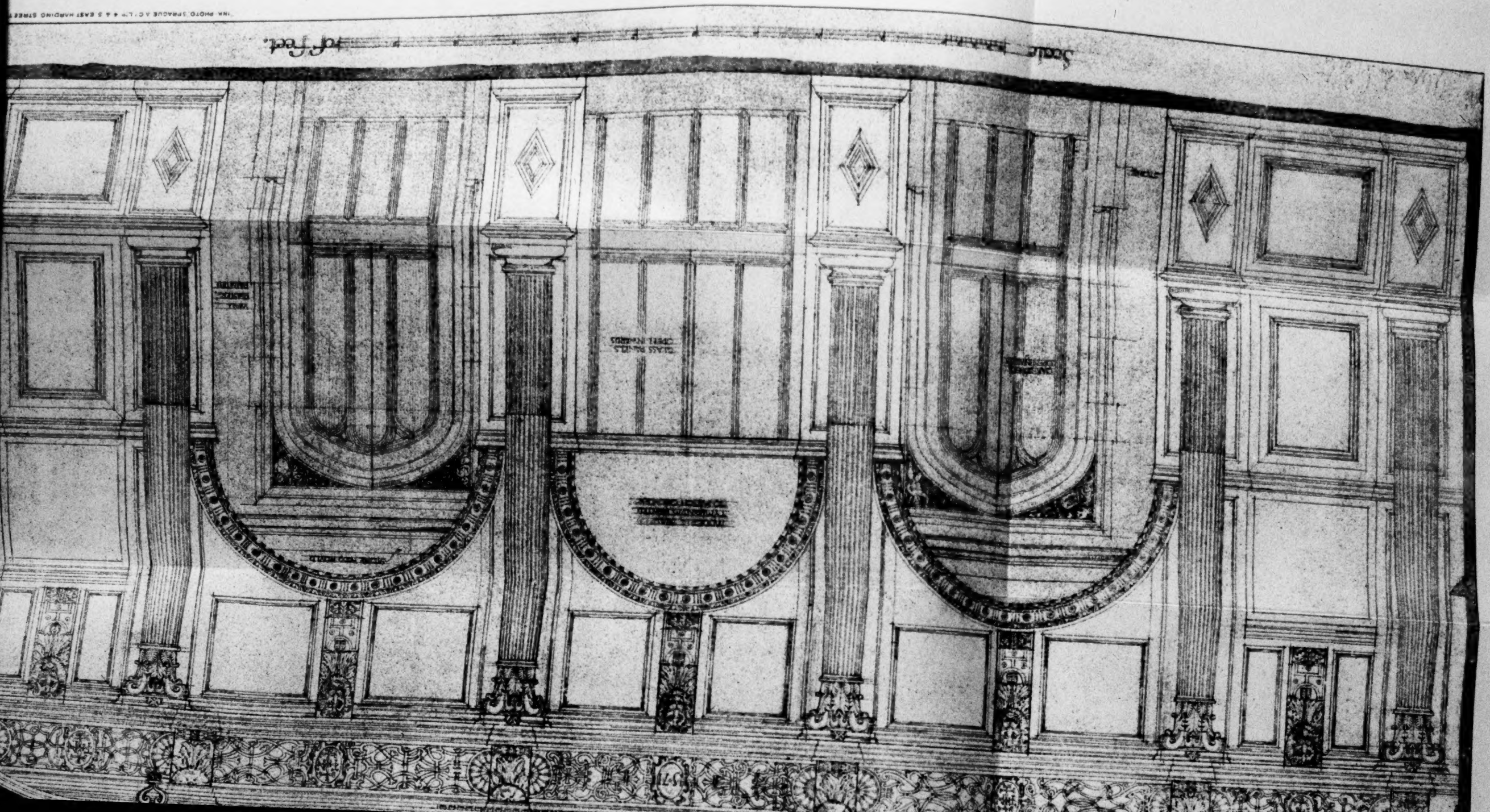
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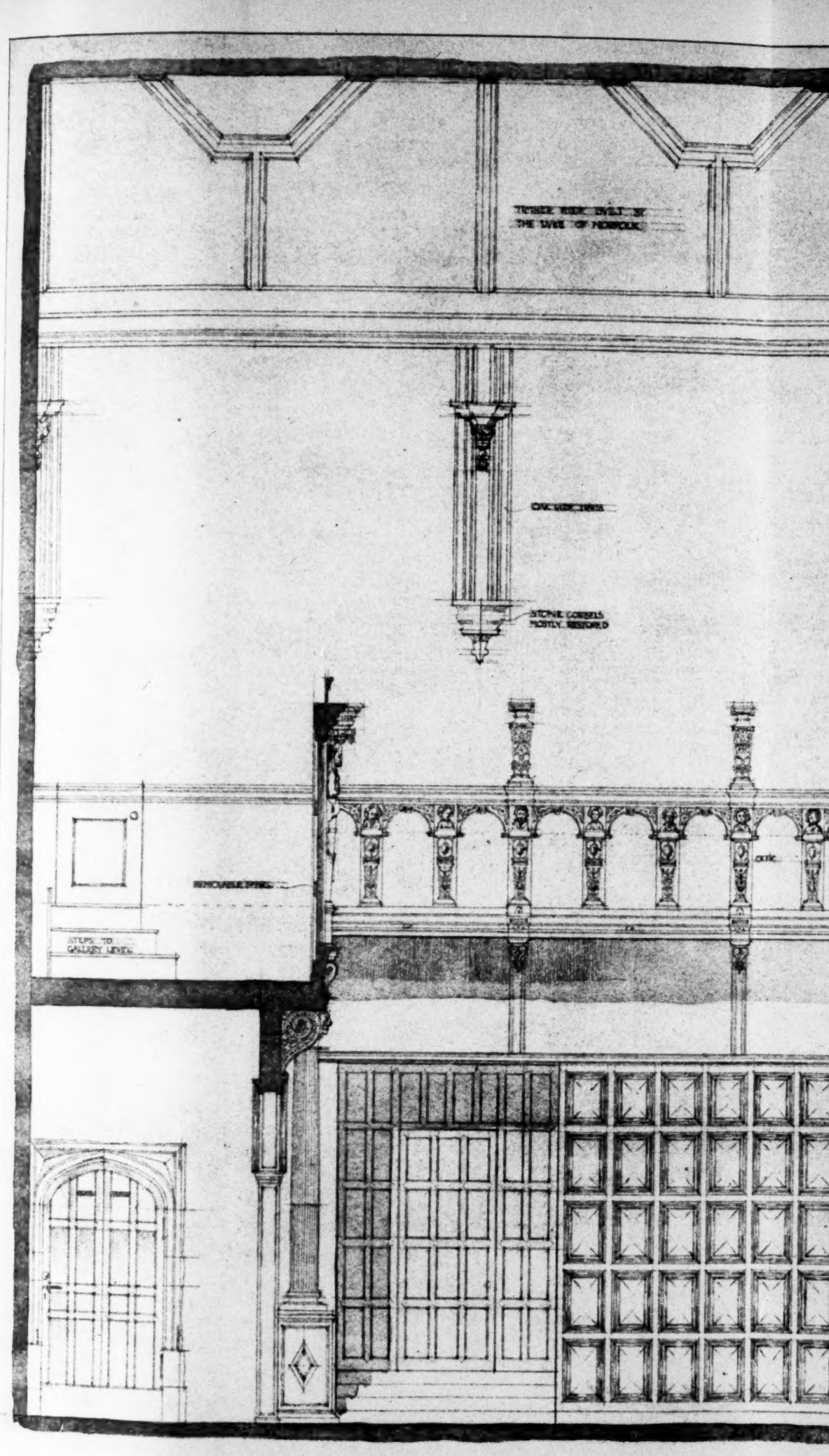

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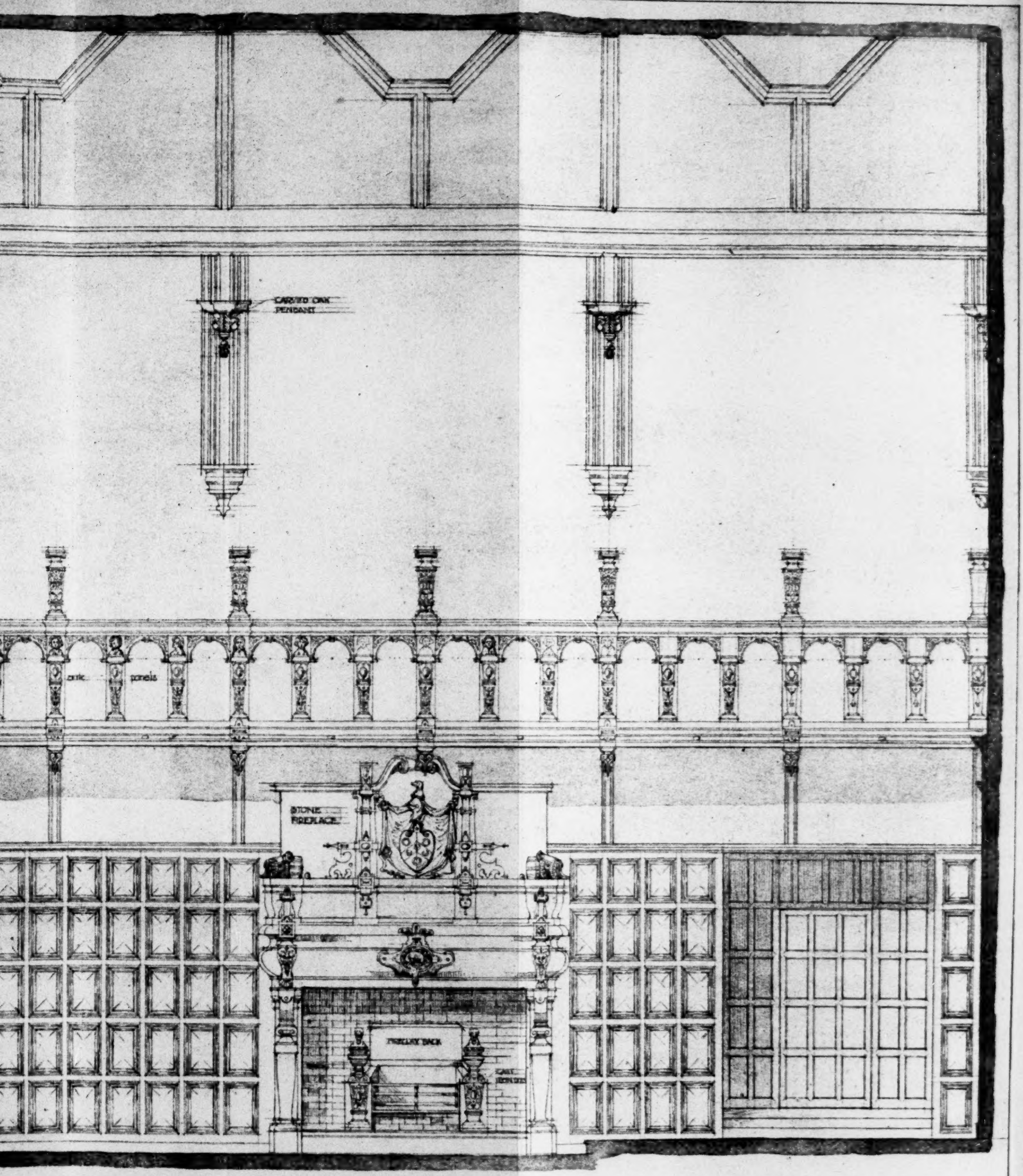

CHARTERHOVSE LONDON.

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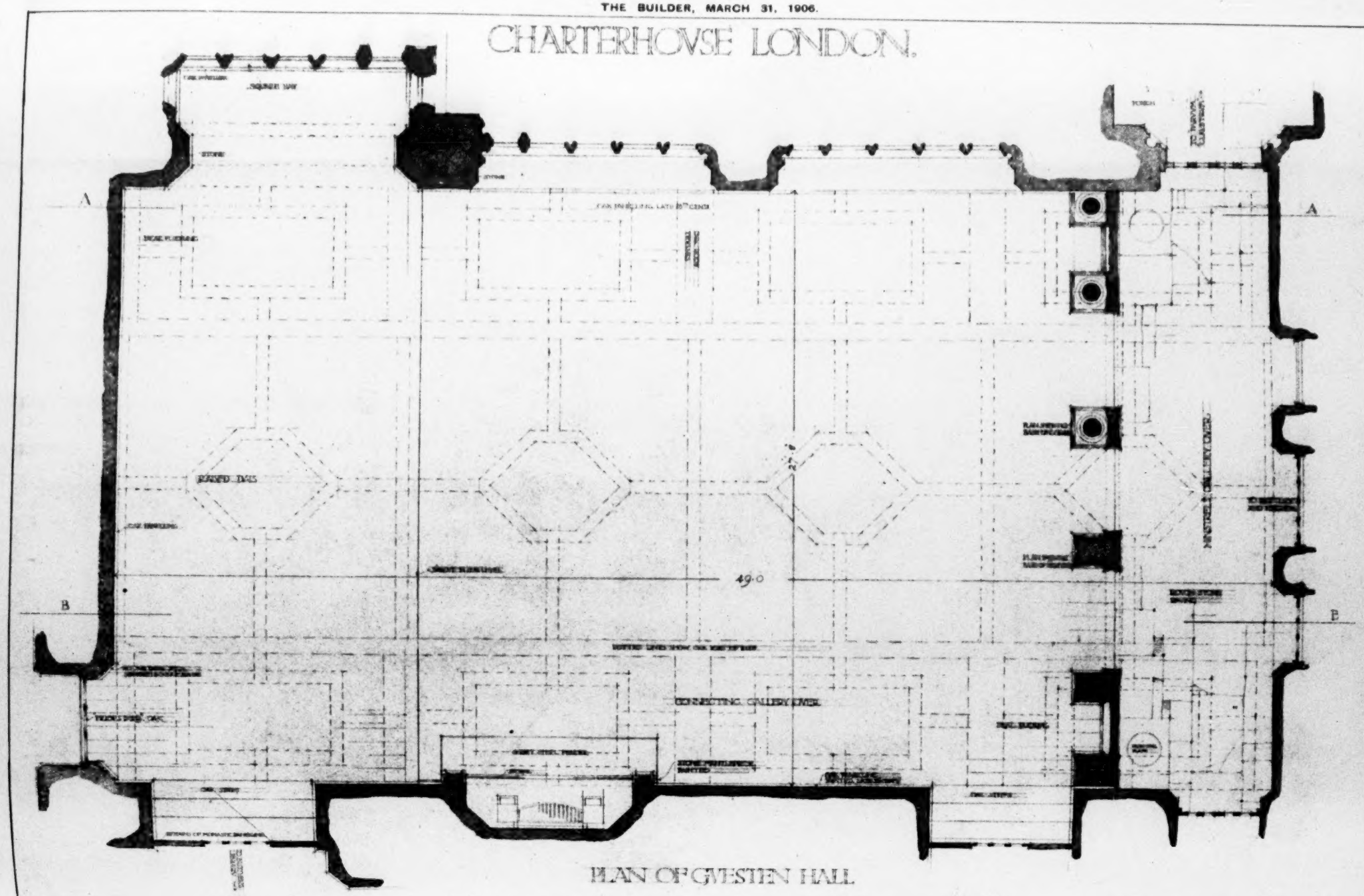
CHARTERHOUSE LONDON.



PLAN OF GIESTEN HALL

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MEASURED AND DRAWN BY A S CARTER.

THE PHOTO-LITHOGRAPHIC CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE E.C.

CHARTERHOUSE LONDON, E.C.

details

Scale ... of feet

SECTION THRO STONE CORBEL

WROT IRON HINGE half full size

SECTION THRO ROOF TRUSS

SECTION THRO FIREPLACE

SECTION OF MOULDINGS TO MINSTREL GALLERY.

SECTION THRO JAMB OF WINDOW TO MINSTREL GALLERY

SECTION OF MOULDING TO MOVABLE PANELS ON MINSTREL GALLERY full size

SECTION THRO STONE JAMB TO PRIORS DOOR

SECTION THRO FRONT OF CONNECTING GALLERY

SKETCH OF CASEMENT FASTNERS

INSIDE

SECTION THRO JAMB OF LARGE WINDOWS

CORNICE TO PANELLING

MEASURED AND DRAWN BY A. S. CARTER

INK PHOTO SPRAGUE & C° LIM 4 & 5 EAST HARDING STREET FETTER LANE E.C.

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and extends all round the walls to a height of 15 ft. The connecting gallery before mentioned is elaborately carved with quaint figures, and has a row of standards rising above the rail, probably used for fixing rush-lights and torches upon to give light to the hall below. The stone fireplace under was also added by the Duke. It is of fine proportions, with many subtle and vigorous mouldings, and forms a very pleasing example of the open-fire hearth of the period.

On entering the hall one is struck with its size and lofty proportions, it being 49 ft. by 27 ft. 8 in. by no less than 55 ft. to its highest point; a goodly height, indeed, and one notices the effect of the general classic influence of the time upon the dying traditions of the mediæval builders. The Charterhouse has played no mean part in the history of our country, and it is interesting to note that it was here that Thackeray laid the last scene in Colonel Newcome's life.

ALEX. S. CARTER.

Correspondence.

SEA SAND FOR MORTAR.

SIR,—Through the medium of your paper could any authority enlighten me as to why there is a great tendency of late to utilise sea sand in preference to good pit sand, in connexion with building and sewer works.

In the past the outcry has been concentrated against the presence of salt in sea sand.

Has this difficulty been overcome by process, otherwise one fails to understand such a course, unless with a view to economy. ENQUIRER.

The Student's Column.

SOME MATHEMATICAL METHODS AND USEFUL DATA FOR ARCHITECTS.—XII.

LABOUR-SAVING CONSTANTS.

CALCULATIONS of various kinds frequently occurring in practice can be wonderfully simplified in many cases by the employment of constants, especially if these are prepared in such manner that one multiplication or division of a given quantity will furnish the required result.

To show the desirability of constants which represent in concentrated form the result of several preliminary arithmetical processes, let us suppose that it is required to find the weight of a hollow cast-iron cylindrical column 20 ft. long by 12 in. external diameter, the metal being $\frac{3}{4}$ in. thick.

Clearly the first thing is to find the volume of metal in cubic inches or cubic feet, and the second to multiply the value into the weight of metal per cubic inch or cubic foot.

(1.) The volume may be found by calculating the areas of two circles, one corresponding with the outside diameter and another with the inside diameter of the column, multiplying the difference of these values—which represents the net area of metal—into the length of the column in inches.

Thus the area of a circle 12 in. diameter

$$= 12^2 \frac{\pi}{4}$$
$$= 144 \times 0{\cdot}7854$$
$$= 113{\cdot}1 \text{ sq. in.}$$

Similarly, the area of a circle $12-(2 \times 0{\cdot}75) = 10{\cdot}5$ in. diameter

$$= 10{\cdot}5^2 \frac{\pi}{4}$$
$$= 110{\cdot}25 \times 0{\cdot}7854$$
$$= 86{\cdot}6 \text{ sq. in.}$$

Therefore the area of metal in the cross section of the column is

$$113{\cdot}1 - 86{\cdot}6 = 26{\cdot}5$$

and the volume is

$$26{\cdot}5 \times 240 = 6360 \text{ cub. in.}$$

Then, taking the weight of cast-iron at 0·26 lb. per cubic inch, the required weight is

$$6360 \times 0{\cdot}26 = 1653{\cdot}6 \text{ lb.}$$

(2) The volume can also be found by calculating the circumference corresponding with the *mean* diameter of the annular ring (that is the external diameter less the thickness of metal), then multiplying the *mean* circumference by the thickness of metal, and the product by the length of the column in inches, and by 0·26, the weight of cast-iron per cubic inch.

Thus the mean diameter of the annular ring

$$= 12 - 0{\cdot}75$$
$$= 11{\cdot}25 \text{ in.}$$

and the corresponding mean circumference is

$$11{\cdot}25\,\pi = 11{\cdot}25 \times 3{\cdot}1416$$
$$= 35{\cdot}34 \text{ in.}$$

Therefore the area of metal in the cross section of the column is

$$35{\cdot}34 \times 0{\cdot}75 = 26{\cdot}5 \text{ sq. in.}$$

and the volume is

$$26{\cdot}5 \times 240 = 6360 \text{ cub. in.}$$

Then the required weight is

$$6360 \times 0{\cdot}26 = 1653{\cdot}6 \text{ lb., as before.}$$

Although we have not needlessly occupied space by detailed workings, the general character of the foregoing calculations is sufficient to indicate the comparatively large amount of work they involve, and to suggest the desirability of shorter methods.

The following is a demonstration of the way in which method (1) can be simplified for general use:—

As employed above, the operation is represented by the equation

$$W = \left(D^2 \frac{\pi}{4} - d^2 \frac{\pi}{4}\right) lw$$

Where W = weight of the column, D = external diameter, d = internal diameter, l = length in inches, and w = weight of cast-iron per cubic inch.

This may be written

$$W = (D^2 - d^2) \frac{\pi}{4} lw$$

Whence, employing $\left(\frac{\pi}{4}\ lw\right)$ as a constant, denoted by the symbol c, and assigning a constant value to l, we get

$$W = (D^2 - d^2)\ c.$$

Taking l at 12 in., the value of c becomes

$$0{\cdot}7854 \times 12 \times 0{\cdot}260 = 2{\cdot}45.$$

Then to calculate the weight of the given column is a very simple matter.

First we get the weight per foot length,

$$w = (12^2 - 10{\cdot}5^2) \times 2{\cdot}45$$
$$= 33{\cdot}75 \times 2{\cdot}45 = 82{\cdot}68 \text{ lb.}$$

and next,

$$W = 82{\cdot}68 \times 20 = 1653{\cdot}6 \text{ lb., as before.}$$

But method (2) points to a still more simple process, as shown below.

The operation previously performed is represented by the equation

$$W = d_m\, \pi\, t\, lw$$

where d_m = *mean* diameter of the annular ring, and the other symbols have the same significations as before.

Separating variable from constant values we get

$$W = (d_m\, t\, l)\ (\pi\, w).$$

Assigning the constant value of 12 in. to l, and treating $(\pi\ l\ w)$ as a constant with the value $(3{\cdot}1416 \times 12 \times 0{\cdot}26) = 9{\cdot}8$, we have for the weight per foot length

$$w = (d_m\, t)\ 9{\cdot}8.$$

Then to calculate the weight of the specified column, we first find the weight per foot length,

$$w = (11{\cdot}25 \times 0{\cdot}75) \times 9{\cdot}8$$
$$= 84{\cdot}437 \times 9{\cdot}8 = 82{\cdot}68$$

and next

$$W = 82{\cdot}68 \times 20 = 1653{\cdot}6 \text{ lb., as before.}$$

To facilitate calculations relating to the weight of hollow cylinders, such as are represented by columns, flues, drains, and pipes, we give in Table IV. constants for different materials, by the aid of which the weight can be readily computed per unit length of one foot or one yard, from the diameter and thickness in inches, or in feet. This table has been calculated for use with the equation

$$W = (d_m \times t)\ c$$

where $c = (\pi\ l\ w)$.

By preparing in a similar manner constants for unit lengths of hollow columns and conduits of other sections, the corresponding weights can be readily computed.

Ellipse.—The constant for a hollow elliptical body may be determined by one of the two following methods:—

(1.) The circumference of an ellipse is given approximately by the rule

$$\left(\frac{D + D}{2}\right) \pi = (D + D)\ 1{\cdot}5708$$

where D = major axis and D = minor axis.

Consequently the area of material in the cross section in a hollow ellipse may be found by employing mean values for the major and minor axes.

Thus

$$A = (D_m + D_m) \times t \times 1{\cdot}5708$$

and the weight per unit length is

$$w = [(D_m + D_m) \times t]\ (1{\cdot}5708\ lw)$$

which may be stated

$$w = [(D_m + D_m) \times t)]\ c.$$

(2.) An alternative method of finding the area of material in the cross section is to take the difference between the areas of two ellipses, one calculated from the outside axes, and the other from the inside axes.

The area of an ellipse being equal to the product of its semi-axes into π, the process of finding the net area of a hollow elliptical body is

$$A = (\tfrac{1}{2}D \times \tfrac{1}{2}D)\ (\tfrac{1}{2}d \times \tfrac{1}{2}d)\ \pi$$
$$= \frac{(DD - dd)}{4}\ \pi = (DD - dd)\ \frac{\pi}{4}$$

Therefore the weight per unit length is

$$w = (DD - dd)\ \left(\frac{\pi}{4}\ l\ w\right)$$

which may be expressed

$$w = (DD - dd)\ c,$$

where D = external major axis, D = external minor axis, d = internal major axis, d = internal minor axis, l = unit of length adopted, and w = unit weight of material.

If method (1) be adopted the values of c for a unit length of 1 ft. are

$c = (1{\cdot}15708 \times 12 \times w)$ for dimensions in in.
$c = (1{\cdot}15708 \times 1 \times w)$ „ „ ft.

If method (2) be adopted the values become

$c = (0{\cdot}7854 \times 12 \times w)$ for dimensions in in.
$c = (0{\cdot}7854 \times 1 \times w)$ „ „ ft.

TABLE IV.—CONSTANTS FOR CALCULATING THE WEIGHT OF HOLLOW CYLINDRICAL COLUMNS, CONDUITS, AND PIPES OF VARIOUS MATERIALS FOR A LENGTH OF 1 FOOT AND OF 1 YARD.

Material.		Values of Constant. (c)			
		Per Foot Length.		Per Yard Length.	
		Diameter.		Diameter.	
Description.	Weight per cubic foot in lb.	In in.	In ft.	In in.	In ft.
		$c = \pi\ l\ w$	$c = \pi\ w$	$c = 3\ \pi\ l\ w$	$c = 3\ \pi\ w$
Brickwork	112	2·4	352	7·2	1,056
Cement	86	1·9	272	5·7	816
Cement mortar	130	2·8	408	8·4	1,224
Concrete	130	2 8	408	8·4	1,224
Earthenware	115	2·5	361	7·5	1,083
Cast-iron	450	9·8	1,413	29·4	4,239
Wrought-iron	480	10·6	1,508	31 8	4,524
Mild steel	490	10·7	1,539	32·1	4,617
Brass	505	11·0	1,586	33·0	4,758
Copper	549	12·0	1,725	36·0	5,175
Lead	712	15·5	2,237	46·5	6,711
Zinc	450	9·8	1,413	29·4	4,239

The constants in this table are calculated upon weights per cubic inch where diameter and thickness are intended to be taken in inches, and upon weights per cubic foot where diameter and thickness are intended to be taken in feet.

As addition involves less trouble than multiplication, it will save time to employ constants calculated in accordance with the former method.

Square.—(1) The area of material in a hollow square is

$$A = D^2 - d^2,$$

and the weight per unit length is

$$w = (D^2 - d^2)\ (lw),$$

where D = length of external side, and d = length of internal side. The constant is $c = lw$.

(2) Another method is to use as factors the *mean* length of side s_m, the thickness of side t, and the number of sides n.

Thus the mean length of side s_m is obviously $S - (2 \times \frac{1}{2}t)$, and the number of sides, $n = 4$.

Then the area of material in the cross section of a hollow square is

$$A = [S - (2 \times \tfrac{1}{2}t)] \times 4$$
$$= (s_m \times t) \times 4$$

and the weight per unit length is

$$w = (s_m \times t)\ (4\ lw)$$

the constant being $c = (4\ lw)$.

Hexagon.—(1) The area of material in the cross section of a hollow hexagonal body can be ascertained by taking the difference between the areas of two hexagons, one calculated from the outside dimensions, and the other from the inside dimensions.

The rule for calculating the area of a regular polygon is

$$A = S \times n \times (r \div 2)$$

where S = length of external side, n = number of sides, and r = radius of inscribed circle.

To find the area of a hexagon is perfectly easy, as the length of outer side is constant for any given hexagon. But the length of inner side for a hollow hexagon varies with the thickness of metal or other material, and must be determined for any given thickness either by measurement from a specially prepared drawing or by calculation.

To ascertain the length of the inner side by calculation we must first determine the length of the perpendicular of a right-angled triangle, of which the hypotenuse is a line joining the points where the inner and outer surfaces of two sides meet, the base of which equals the thickness of the sides of the hexagon, and the angle opposite the perpendicular = 30 deg. As the internal angle of a hexagon = 120 deg., the angle opposite the base = 60 deg., and—since the three angles of a triangle are together equal to 180 deg.—the angle opposite the perpendicular = 30 deg.

By trigonometry the perpendicular of a triangle = base $\times$ *tan* θ.

Whence in this case the length of the perpendicular

$$= (t \times \textit{tan}\ 30\ \text{deg.}),$$

and as one such triangle has to be considered at each end of each side the length of side for the inner hexagon is

$$s = S - (2t \times \textit{tan}\ 30\ \text{deg.}).$$

Table V. gives the value of r for a hexagon = 0·866, when the length of side = 1. So it is necessary to multiply this factor by the length of side.

TABLE V.—DATA RELATIVE TO POLYGONS.

Description.	No. of Sides	Internal Angle.	Length of Side of Polygon = 1.	
			Radius of Inscribed Circle (r).	Area.
		deg. min.		
Triangle	3	60 0	0·2887	0·43301
Square	4	90 0	0·5000	1·00000
Pentagon	5	108 0	0·6882	1·75047
Hexagon	6	120 0	0·8660	2·59807
Heptagon.....	7	128 34	1·0383	3·63391
Octagon	8	135 0	1·2071	4·82342
Nonagon	9	140 0	1·3737	6·18182
Decagon	10	144 0	1·5388	7·69420
Undecagon	11	147 16	1·7028	9·36564
Dodecagon	12	150 0	1·8660	11·19615

The general rule for the area of material in the cross section of a hollow hexagonal body is

$$A = \left(Sn \times \frac{r}{2}\right) - \left(sn \times \frac{r}{2}\right).$$

Inserting the factors in full the equation becomes

$$A = \left[Sn \times \left(\frac{0{\cdot}866}{2} S\right)\right] - \left[\left\{S - (2t \times \textit{tan}\ \theta)\right\} n \times \left(\frac{0{\cdot}866}{2} (S - 2t \times \textit{tan}\ \theta)\right)\right]$$

which reduces to

$$[S^2 - (S - t\ 1{\cdot}1548)^2]\ 2{\cdot}598.$$

When the area has been found, it only requires multiplication by the length in inches or feet and the weight per cubic inch or cubic foot to give the required weight.

Therefore the weight of a hollow hexagon per foot length is

$$w = [S^2 - (S - t\ 1{\cdot}1548)^2] \times (2{\cdot}598\ lw)$$

The constants are

$c = (2{\cdot}598 \times 12 \times w)$ for dimensions in in.
$c = (2{\cdot}598 \times 1 \times w)$ „ „ ft.

Apply the equation to the case of a hollow hexagonal cast-iron column 12 ft. long with the length of side = 6 in. and $\frac{1}{2}$ in. thickness of metal, and taking the value of c at

$$(2{\cdot}598 \times 12 \times 0{\cdot}26) = 8{\cdot}1$$

we have

$$W = [S^2 - (S - t\ 1{\cdot}1548)^2]\ c \times 12$$
$$= [36 - (6 - 0{\cdot}5 \times 1{\cdot}1548)^2] \times 8{\cdot}1 \times 12$$
$$= [36 - 29{\cdot}4) \times 97{\cdot}2$$
$$= 641{\cdot}5\ \text{lb.}$$

(2) Instead of applying the foregoing method, which is based upon the rules given generally in text-books and works of reference, we may arrive at the area and weight of a hollow hexagon far more expeditiously by the following alternative method :—

Multiply the *mean* length of side by the thickness and number of the sides.

The mean length of side, s_m, is

$$s_m = S - (2 \times \tfrac{1}{2}t \times \textit{tan}\ \theta)$$
$$= S - (t\ 0{\cdot}5774)$$

Therefore the weights per foot length are

$w = [(S - t\ 0{\cdot}5774)\ t]\ n\ 12\ w$ for dimensions in in.
$w = [(S - t\ 0{\cdot}5774)\ t]\ nw$ „ „ ft.

Applying this method to the case of the hollow hexagonal cast-iron column in the example above, and taking the value of c at $(6 \times 12 \times 0{\cdot}26) = 18{\cdot}72$, we have

$$W = [(S - t\ 0{\cdot}5774)\ t] \times c \times 12$$
$$= [(6 - 0{\cdot}5 \times 0{\cdot}5774)\ 0{\cdot}5] \times 18{\cdot}72 \times 12$$
$$= (5{\cdot}7113 \times 0{\cdot}5) \times 224{\cdot}64$$
$$= 641{\cdot}5\ \text{lb., as before.}$$

Hollow octagons and other hollow polygonal bodies can be treated in similar manner, taking due account of the internal angle in each case.

Next week we shall give a table of constants for hollow columns of different sections in various materials, and a selection of useful constants for general use.

NORTHCOTE-ROAD, BATTERSEA, FIRE-STATION.

ON February 8, 1898, the London County Council approved a scheme for further increasing the means of protection from fire in London. This scheme included the provision of a permanent fire-station in the neighbourhood of South Battersea, a district which is intersected by several lines of railway, which interfere greatly with direct means of communication. For the site of the station, the Council required Nos. 61 to 71 (odd) Chatham-road, and the rear portions of the gardens of Nos. 41-59 (odd), Chatham-road, at a cost of 2,386*l.* 19*s.* 2*d.*, including all costs. The Council decided on November 22, 1904, that the station should be erected by the Works Department, and work was commenced in December, 1904. The architect's estimate was 12,500*l.* The staff of the station consists of an officer, ten firemen and a coachman, and there will be kept at the station a motor fire-engine, a horsed escape, a long ladder (drawn by hand), and a hose cart. It is proposed that the fire-engine at this station shall be a motor engine, but stalls for four horses have been provided, as until motor traction has been adopted more extensively for the brigade appliances, it is necessary that stations should be adapted for both types of appliances. The following is a detailed description of the station taken from particulars furnished by Mr. W. E. Riley, F.R.I.B.A., the superintending Architect to the Council :—

Ground Floor.—The appliance room (with run-out to Chatham-road) is 39 ft. 7½ in. by 38 ft. 3 in., with accommodation for a steam fire-engine and a horsed escape, and stalls for four horses, arranged as at the Kensington fire-station. A covered shed is provided for the long ladder in the north-west corner of the yard. The walls of the appliance-room are lined with white glazed bricks, the floors paved with ironstone tile paving, having panels of blue stable bricks in same to assist the horses in starting. The stalls are drained into covered enamelled iron guttering, flushed automatically, a sinking has also been formed in the floor under the appliance to take the drippings from the boiler, and this is connected with the guttering referred to. The watch-room, 9 ft. 9 in. by 12 ft. 4½ in., is entered from the appliance-room, and has an inspection window overlooking the passage which commands both the separate entrance and the entrance to the waiting-room. The waiting-room is a small room opening from the corridor which leads from the separate entrance to the staircase and appliance-room. The recreation-room is also entered from this corridor, is 24 ft. by 19 ft. (with panelled dado), and is capable of containing a full size billiard-table. There is a lavatory and water closet adjoining. The laundry, 19 ft. by 13 ft., with hot closet and stokery, is lined with white glazed bricks, and paved with granolithic paving, and is entered from the yard, in the north-east corner of which are situated the workshop, fodder store, stores for coal in bulk, coal in sacks, coke, oil and wood, general store, and twelve coal stores to quarters, and also the urinal and water-closet. The yard, which is entered from the run-in from Chatham-road and the back of the appliance-room, is about 10,584 sq. ft. in area, and is paved with granite sets. The surface has been made level throughout for purposes of drilling. At the western end of the yard near the ladder-shed, is the drill tower and hose hoist combined. This is an iron-framed structure covered with oak weather-boarding; the ground story contains a smoke chamber enclosed with concrete, having a trap-door in the ceiling for the liberation of smoke, the upper stages have open wood batten flooring, ordinary sash windows (but without glazing) are fitted in the vertical face of tower, and access is obtained to the "look out" on top by means of an iron ladder in the hose hoist portion.

First, Second, Third, and Fourth Floors.—On the first-floor are provided one set of three-room quarters, and one set of two-room quarters, also single men's quarters, consisting of two dormitories, mess room, bath-room and lavatory, water-closet, and scullery. On the second floor there are one three-room set, one two-room set, and the station-officer's quarters, consisting of four rooms. On the third and fourth floors there are three three-room sets of quarters. A bath-room is provided on each floor. A sliding pole leads from the single men's dormitories into the appliance-room in front of the pier between the front doors. The station is lighted by electricity. The east and west elevations of the building are faced with red brick, the front elevation to Chatham-road is faced with red bricks and has Portland stone dressings. The appliance-room is heated by hot water, a subsidiary boiler being provided for this purpose in the stokery.

STANFORD'S MAP OF METROPOLITAN RAILWAYS, TRAMWAYS, AND MISCELLANEOUS IMPROVEMENTS.

OWING to the general lull in Metropolitan railway projects the new issue of Mr. Stanford's useful map does not present quite so many suggested lines of communication as in the last two or three years. Nevertheless, the record of railways under construction, sanctioned, and proposed is satisfactory so far as it extends. Of lines in progress and practically completed the Great Central new route and the Baker-street to Waterloo Railway are the most important, the former being intended to open up a great suburban district in the north-west and the latter to link North and South London.

In the north-east district an extremely valuable route sanctioned is the North-East London Railway from the City to Walthamstow *viâ* Bethnal-green, Hackney, and Leyton, and the proposed Hammersmith, City, and North-East London line, passing through Shoreditch, Haggerston, Dalston, and Stoke Newington to Tottenham and beyond, is equally desirable. Both of these are termed "underground railways," but we assume they will emerge into daylight when open country is reached.

In South-East London no railway projects are in hand. Existing companies do not appear anxious to compete with tramways, and the district is scarcely suitable for underground electric railways. In North-West London the Great Northern Railway appear to be widening their Edgware branch, although Mr. Stanford does not make quite clear the precise work in contemplation. The Baker-street and Waterloo line we have already mentioned as nearly ready for operation. Two other sanctioned lines shown on the map are the Great Northern, Piccadilly, and Brompton, the Charing-cross, Euston, and Hampstead, but, curiously enough, neither of these is marked with any distinguishing sign or number, a rather disadvantageous omission. The District Railway is accompanied by a dotted line indicating the sanction of some additional work, the nature of which ought to be explained in the key to the map. A new loop on the Great Western system from Acton to the West London Railway practically completes the category of railway projects sanctioned in this quarter of London. Two useful underground lines proposed are the North-West London Railway from Victoria along Edgware-road, to Cricklewood, and the Hammersmith, City, and North East London Railway, with a feeder branch from the Marble Arch.

In the south-west district no new railways are in contemplation, this part of the Metropolis being left to tramways, so far as fresh traffic is concerned.

Turning now to tramway projects we find abundant evidences of progress. A number of useful little links have been sanctioned and proposed in North-East London, such as those from Aldgate to the Mint, Stoke Newington-road to Lea Bridge, Seven Sisters-road to Stamford-hill, East India Dock-road to Canning Town, and some purely local connexions in Essex.

The list of sanctioned lines in the south-east is more extensive, and includes routes such as the following:—Blackwall Tunnel—Greenwich, Woolwich—Plumstead, Woolwich—Eltham, New Cross—Forest-hill, Camberwell—Peckham-rye, East Dulwich—Forest-hill, and lines in the Croydon and Beckenham districts joining up Croydon, Beckenham, Anerley, Penge, Lower Sydenham, and Norwood.

In the north-west quarter tramways are sanctioned between Child's-hill and Willesden, Harlesden and Sudbury, Harlesden and Acton, Harlesden and Putney, and in this portion of the map occurs the Kingsway route now in full operation.

In the south-west there are evidences of much activity on the part of the London County Council, and the London United Tramways Company Lines already sanctioned include those between Tooting and Mitcham, Tooting and Wandsworth, Summers Town and Wimbledon, Tooting and Kingston, Barnes and Richmond, and various lines in the Kingston district. The Surrey extensions of the London United Tramways are of the utmost importance, and constitute a remarkable testimony to the energy and perseverance of Sir Clifton Robinson, who has worked so hard to bring pleasant places within reach of those who require fresh air and recreation in the true sense of the word.

Mr. Stanford's map is issued, as last year, on two sheets, to the scale of 3 in. to a mile, and in addition to means of Metropolitan communication it includes other proposed undertakings, such as additional arrangements for the distribution of electric power, new buildings for public purposes, and some street and bridge improvements. We think the general utility of the map would be increased by a more detailed explanatory table for the benefit of the uninitiated. In fact, a good many people who are interested in the question of London traffic, but have not at hand full records of the undertakings indicated on the map, would be glad to purchase at a small additional charge a supplementary sheet or pamphlet containing brief particulars as to the origin and scope of the various projects.

Obituary.

M. CARRIÈRE.—The eminent painter, Eugene Carrière, has died after a long and painful illness of three years. He had suffered several operations for cancer in the throat, which had only the effect of delaying the final result. At the last he passed away, without suffering, in his sleep. Carrière was born at Gournay-sur-Marne in 1849; he lived for a long time at Strasbourg, and after his captivity during the German war he returned to Paris and to the atelier of Cabanel. In 1876 he competed unsuccessfully for the Prix de Rome. In 1879 he exhibited a picture entitled "Jeune Mère," in which he showed already the peculiar style which was to distinguish his work. It was the first of a series of pictures all dealing with the idea of motherhood. Married early, and always poor, he found most of the models for his pictures in his wife and children. His works were too numerous to mention here; but among them may be named the friezes which he painted in the Salon des Sciences at the Paris Hôtel de Ville; "L'Enfant Maldae"; "Premier Voile," suggested by the first communion of his eldest daughter; "Maternité," which is in the Luxembourg; a decorative panel for the Sorbonne; a "Crucifixion" exhibited at the Salon of 1897; portraits (among them the curiously original one of Daudet), lithographic drawings, etc. He had latterly been occupied mainly in the decoration of the Mairie of XII. Arrondissement, which he leaves unfinished. Carrière was "Officier" of the Legion of Honour.

General Building News.

CHURCH RENOVATION, KINGSTONE.—The Church of St. John and All Saints, Kingstone, was reopened on the 15th inst., after having been renovated. The work comprised, in the interior, the entire removal of a coating of thick mortar, discoloured, as was the stone work, by damp. This, in the chancel, has been replaced with thin cement; whilst in the nave the walls have been pointed. The decayed plank floor has been replaced by wood block flooring; a dwarf-wall, with steps, all of Ham-stone, has been erected as a boundary to the chancel. The old seating has been refitted and revarnished. The Ecclesiastical Commissioners have relaid the chancel floor with dark tiling, and beneath the choir-stalls with wood block flooring. The sanctuary floor, which is paved with ancient memorial stones of the Tripp family, has been polished. The outside work consists chiefly of pointing the walls and draining. The work has been under the superintendence of Mr. L. Hepworth, whilst Mr. William Hutchings and Mr. Hazlewood have been the contractors. Messrs. Hann & Son, of Beaminster, have done the chancel work for the Commissioners.

CHRIST CHURCH, TOTLAND BAY.—Improvements have recently been made to this church at a cost of over 1,800*l*. The old transept on the south side of the church, which had been closed for a number of years owing to its insecurity, has been taken down, and in its place there has been constructed a new south aisle of late XIIIth century English Gothic style, in keeping with the remaining portion of the church. A feature of the work is the polished Hoptonwood stone columns supporting the arcades, the shafts being monoliths. Additional seating accommodation is provided for 120. A vestry is also provided. Another alteration is the erection of a western porch, with a gallery over, giving thirty additional sittings. This porch is closed with iron gates, carried out from the architect's designs by Mr. Bundy, of Carisbrooke. The church has also been re-heated on a new system by Messrs. Parker, of Birmingham, under the architect's superintendence. This work marks the completion of the first portion of an extensive scheme for enlarging Christ Church from the designs of Mr. Percy Stone, architect, which embraces an additional aisle on the north side of the church, a lengthening eastward of the chancel, and the erection of a tower at the north-west. In addition to the improvements already mentioned, a lych-gate of XVth century design has been placed at the north-west angle the churchyard. The stonework and carving has been executed by Messrs. Garrett and Haysom, Southampton, and the general work has been carried out by Mr. R. D. Medway, Freshwater. Mr. C. Noble, of Bournemouth, was the clerk of the works.

CHURCH EXTENSION, BRIDGFORD.—The parish church of St. Giles, West Bridgford, is to be enlarged. The proposed work includes the completion of the body of the church, giving it a length of 67 ft. by 28 ft. wide, with two class-rooms or vestries at the west end which can, if necessary, be thrown into the main building, giving it a total length of 90ft. It has been designed by Mr. W. R. Gleave, of Nottingham, who has been architect for the whole scheme.

BAPTIST CHURCH, SOUTHFIELDS.—A new Baptist church is in course of erection on a site at the corner of Wimbledon Park-road and Pir-bright-road, Southfields. The work is being carried out by Mr. William Hammond, of Battersea, to the plans of Mr. Weymouth, of Westminster. The portion of the church now being constructed will cost nearly 2,800*l*., and the whole church, when completed, with galleries, tower, vestries, etc., will cost some 4,500*l*. to 5,000*l*.

WESLEYAN REFORM CHAPEL AND SCHOOLS, HUCKNALL TORKARD.—On the 10th inst. the memorial stones were laid of the new chapel and schools of the Wesleyan Reform community at Hucknall Torkard. The chapel is designed in the Gothic style with frontage to Annesley-road. It will be 52 ft. by 45 ft., with a roof of the open hammer-beam principle, and will provide seating accommodation for 555 persons. The front will be executed in red Ibstock bricks, the vestibules will be laid in mosaic, and the aisles in wood block. Entrance to the schools will be gained from Ogle-street. The scheme includes a central hall, and various classrooms with folding partitions. A gallery will run on either side of the central hall, and as the Ogle-street end of the site is lower than that of Annesley-road, this gallery is on a level with the chapel floor. The building is from the designs of Mr. Harry Spencer, architect, of Hucknall, and the contract has been let to Mr. J. A. Munks, builder, Hucknall, for 2,560*l*.

SUNDAY-SCHOOL, IPSWICH.—Memorial stones have just been laid of a new Sunday-school for Bethesda Chapel, Ipswich. The architect of the building is Mr. Frederick G. Faunch, and the builder Mr. G. A. Kenney. The schoolroom will have lavatories and a kitchen attached. In external design the building is Gothic, and is being constructed with red brick facings, with ornamental red brick dressings. The schoolroom will accommodate about 300 children, and will be so arranged that it can be divided by curtains into separate classrooms.

ADDITIONS TO EXETER DIOCESAN COLLEGE.—The Bishop of Exeter opened on the 16th inst. a new dormitory and laboratory which have been erected at the Exeter Diocesan Training College on a portion of the grounds of St. Luke's, Baring-crescent. The walls are of brick, the floors and staircase are constructed with concrete, with steel reinforcement, the partitions and divisions of cubicles are constructed in steel framing and uralite asbestos panels. The ground floor contains a master's room, a physics laboratory, a manual workshop, and an heating chamber, with entrance doorway and hall from Heavitree-road, an exit door on the garden front, and an entrance to the master's room from Baring-crescent. The upper floor, approached by a fireproof concrete staircase, has a dormitory, divided into fifteen cubicles, with a corridor running the whole length, and a panic egress door and stairs on the outside of the building on the garden front, for use in case of emergency, and a master's bedroom, bath-room, etc. The dormitory is ventilated with inlet ventilators and extraction air pumps. The building is warmed with hot water circulating pipes. The plans were prepared and carried out by Messrs. Luscombe, Exeter, the surveyors and builders of the college.

PUBLIC LIBRARY, FENTON.—A public library was opened at Fenton on the 7th inst. The building is situate at the corner of Station-road and Baker-street. The style of architecture is in keeping with that of the Town Hall, which adjoins. The exterior is of red Accrington brick and white Hollington stone—the roofs being covered with brindled tiles. A flight of steps lead to the main entrance, and through doors of solid oak a small vestibule is reached. Van Kannel patent revolving doors separate this from the hall. The hall floor is laid with ceramic mosaic with the Fenton arms as a centrepiece. The walls have been painted green, having a tiled dado, continued up a staircase immediately opposite the entrance, and round the landing. The lending library is on the left of the entrance. The librarian's office is at one end of the counter and communicates with the hall, and a private staircase runs from the lending department to the filing room above. The reference library is entered from the public space of the lending department, with which it communicates. The general reading-room is on the right of the main entrance. The walls have a tile dado shoulder-high, and the roof is half open with pitch-pine principals and plaster panels, divided by pitch-pine ribs. This room will accommodate seventy-eight readers. On the ground floor a caretaker's store-room is also provided, and in the basement there is a heating chamber, with coke and coal stores. The staircase from the entrance-hall is constructed of Stuart's granolithic, and has a wrought-iron balustrade supporting the handrail. The principal room of the first floor is a lecture hall, to seat over 100 persons. It has a rich ornamental plaster ceiling, with moulded ribs; and a faience mantel with a wrought-iron fire-grate. There is lavatory accommodation in connexion. Also on the first floor there are a ladies' reading-room, and a committee-room. Most of the walls in the building are painted with Harland's flat enamel. The woodwork is of selected varnished pitch-pine. The railings, balustrades, grates, and gas fittings are executed in wrought-iron from designs by the architect. The floors are fireproof and of steel and concrete. All the rooms are laid with wood blocks. The entire building is heated by means of low-pressure hot water apparatus on the one-pipe system, with radiators. The furniture and internal fittings have been designed by the architect and have been executed by Messrs. G. Fleet & Co., of Stoke. Messrs. Minton, Hollins, & Co., of Stoke, supplied all the mosaic, faience, and wall tiling; Messrs. Thos. Brawn & Co., of Birmingham, the wrought-iron grates and gas fittings, the remaining iron-work being supplied by Mr. W. Durose, of Tunstall; Messrs. Burgess & Co., of Liverpool, the wood block floors; the Crittall Manufacturing Company, of Braintree, Essex, the wrought-iron casements; Messrs. E. Peake & Sons, of Fenton, the heating apparatus; and Mr. C. T. Lycett, of Burslem, the blinds; and the sanitary ware by Messrs. F. Winkle & Co., of Stoke. The architect of the work was Mr. F. R. Lawson, whose designs were accepted in a competition confined to local architects.

HOTEL IMPROVEMENTS, PORTRUSH.—Improvements, including the erection of a new wing, are being made to the Northern Counties Hotel at Portrush. The work has been designed and planned by the chief engineer to the Midland Railway Company, Mr. Berkeley D. Wise, C.E., and Mr. M'Neill had personal supervision. The contractors for the building were Messrs. M'Laughlin & Harvey, Belfast, and Messrs. Wilkinson, Newcastle-on-Tyne, supplied the marble for staircase; Messrs. Wm. Coates & Son, Ltd., Belfast, electrical fittings and installation; Messrs. Riddels, Ltd., fire escape, steam heating apparatus and radiators, and plumbing work.

THE NEW MUNICIPAL BUILDINGS, COWDENHEATH.—New Municipal Buildings are being erected in High-street, Cowdenheath. Red Dumfriesshire stone has been used in their erection. The town clerk's room, general offices, burgh court room, magistrates' room, and police accommodation are all on the ground floor, while above is situated the council chamber. The architect is Mr. T. Hyslop Ure, Dunfermline.

PADDINGTON WORKHOUSE EXTENSIONS.—The Paddington Guardians are considering questions connected with (1) providing additional infirmary accommodation, and (2) the provision of workshops. In regard to the latter scheme revised plans for a single block of two stories have been prepared. The estimated cost of the workshops, according to these plans, is 2,350*l*.

NEW OFFICES, PALL MALL.—The London and Lancashire Fire Insurance Company are about

to erect new offices in Pall Mall, opposite Marlborough House, from the design of Mr. Guy Dawber. The constructional steelwork and fire-resisting floors are to be done by Messrs. Mark Fawcett & Co.

WESLEYAN HALL AT WHITLEY, READING.—The new Wesleyan Hall, at Whitley, Reading, was formally opened on the 14th inst. The hall forms a part of the Reading Wesleyan Methodist Extension scheme, and is the fifth building which has been erected under the scheme. The foundation-stone was laid on July 12, 1905. The cost of the building, including the purchase of three old houses and the land connected with them, was 6,314*l*. The large hall measures 51 ft. by 68 ft. on the ground floor, but on the gallery level the length is increased to 78 ft. It has an open pitch-pine roof. The hall is approached from the front through a vestibule with two stone staircases leading to the gallery; a third staircase (also of stone) gives access to the other end of the gallery. Behind the hall is a schoolroom measuring 33 ft. 6 in. by 53 ft. It is faced internally with sand-lime bricks supplied by Messrs. S. & E. Collier. The other accommodation comprises an infants' room, minister's vestry, various classrooms, kitchens, and the usual sanitary accommodation. The main hall and approaches are lighted by electricity, and the schoolroom block by incandescent gas. The building contract has been carried out by Mr. Robert Curtis. The stained-glass was from the studio of Messrs. Swaine, Bourne, & Sons, of Birmingham; the electric lighting and heating works have been carried out by Messrs. Callas, Sons, & May, and the wrought-iron work is by Mr. Girdler. The design and superintendence of the whole work has been in the hands of Mr. W. Roland Howell, architect, of Reading.

ALMSHOUSES, PAIGNTON.—Two memorial stones were laid at Paignton on the 21st inst. on the site of two blocks of almshouses and flats. These will consist of forty distinct tenements, in two separate blocks, in Merritt-road, off the Totnes-road, in contiguity to an existing range of flats. The ground-floor tenements, sixteen in number, are to be used as almshouses, and the flats above let at moderate rents for small families. The architect is Mr. W. G. Couldrey. The total cost will be about 6,000*l*., irrespective of the land.

NEW BUILDINGS, NATIONAL PHYSICAL LABORATORY.—The new electrical buildings are nearly finished. They are being erected by Messrs. Mowlem & Co., at an outlay of about 8,000*l*., after the designs of Messrs. Mott & Hay, who act as honorary architects; the contractors' tender was based upon the cost price of the works. In their report for 1905, recently approved by the general board, the executive committee state that the Government have agreed to make a building grant during the current year of 10,000*l*. instead of 5,000*l*., as promised a few months ago, and to increase their annual grant by 500*l*. The laboratory work for the present year embraces the continuation of the wind pressure and steam researches, enquiry into the resistance of materials of construction to impact, experiments upon the effect of the continued application of high pressure to insulators, research into the properties of aluminium bronze, and completion of the work with the Ampère balance.

Stained Glass & Decoration.

ST. MARK'S, KENNINGTON.—A memorial window illustrative of the Sermon on the Mount was unveiled on March 25 in memory of a former vicar, the late Rev. Arthur G. Bowman. The window and tablet were executed by Messrs. Heaton, Butler & Bayne.

INSTITUTE OF BRITISH DECORATORS.—The Council of this Institute has decided to offer for the encouragement of colour decoration, a gold medal, to be awarded yearly, or at intervals of not more than three years, for either one of the following forms of distinction:—(1.) Executed decorative work of notable excellence. (2.) Published work of conspicuous value to decorators. (3.) Scientific invention or improvement in the manufacture of pigments or other materials used in decoration. The competition is to be open to Great Britain, Ireland, Canada and British Colonies. We are glad to notice the proviso that as each medal will be awarded to one person only, any firm whose work may be considered will be required to declare the name of the individual to whom the merit of the work, as a whole, is chiefly due. The Institute also announce that silver medals will be awarded annually to students in the training classes of the London Technical Schools, or in such technical classes for students) as may from time to time be nominated by the National Association of Master-Painters of England and Wales, the National Association of Master Painters in Scotland, or the National Association of Master Painters in Ireland. One such medal is to be awarded in each of the four above-mentioned District Divisions for each of the following subjects:—(*a*) To the student who shows the best general knowledge of the principles of architecture in relation to design. (*b*). To the student submitting the best scheme of colour decoration as applicable to the interior of some existing building. All inquiries must be addressed to the Secretary of the Institute of British Decorators, Painters' Hall, Little Trinity-lane, E.C.

Sanitary and Engineering News.

THE ROYAL SANITARY INSTITUTE.—The following is the list of members and associates elected during March:—*Members:* Dr. J. A. Beaudry (Montreal); T. K. Dealy (Magazine Gap, Hong Kong); N. F. Dennis (Borough Engineer, West Hartlepool); F. C. Douglas (Montreal); H. R. Gray (Montreal); R. T. Hewlett (Director of Public Health Laboratories, King's College, W.C.); W. J. Janes (Streatham, S.W.); A. Johnson (Glasgow); E. P. Lachapelle (Montreal); J. J. Lackland (Water Engineer, St. Helens); R. S. Lea (Montreal); J. A. Lundie (Montreal); T. Moulding (City Engineer and Surveyor, Exeter); E. Pelletier (Montreal); H. J. B. Powell (Provincial de Lima, Peru); J. F. Revill (Leytonstone); J. W. Scane (Montreal); H. J. C. Turner (Bombay); D. Millar (Glasgow). *Associates:* A. Ainley (Huddersfield); W. G. Bell (Plymouth); Miss M. B. Box (South Benfleet, Essex); J. A. K. Cooper (Catford, S.E.); H. R. Crisp (W. Ealing); H. Crossley (Oldham); Miss I. Curwen (W. Hampstead); J. Duncan (Ayr, N.B.); H. J. W. Gidley (Victoria, Hong Kong); T. Greig (Mid-Calder, Midlothian); Miss K. E. Griess (Westminster, S.W.); W. J. Hutchings (Peckham, S.E.); F. Johns (Calabar, S. Nigeria); S. Matthews (Middleton Junction, Lancs.); W. H. McDowell (Ballsbridge, Dublin); H. McKinnon (Rothesay, N.B.); Miss E. G. Moynihan (Regent's Park, N.W.); H. F. Naughton (Roehampton); J. Smith (Glasgow); J. Thorley (Chorlton-cum-Hardy).

SEWERAGE SCHEME, GLENFIELD.—At the Co-operative Hall on the 22nd inst. Mr. W. O. E. Meade-King, Local Government Board Inspector, held an inquiry into the application of Blaby Rural District Council for sanction to borrow 4,230*l*. for purposes of sewerage and sewage disposal for the township of Glenfield. In the course of the inquiry Mr. Turner (Surveyor) said the population his scheme provided for was 900. The treatment of the sewage would be by open septic tanks, filters, and automatic revolving sprinklers; and the effluent would be discharged into the brook.

PROPOSED ADDITIONS TO THE SEWAGE FARM, SALTLEY.—The Birmingham, Tame, and Rea District Drainage Board having applied to the Local Government Board for sanction to borrow 73,000*l*., an inquiry into the subject matter of the application was held on the 22nd inst. at the Council House by Mr. R. H. Bicknell, Inspector to the Local Government Board. Mr. H. A. Pritchard (Deputy Town Clerk) informed the inspector that a few years ago the Board put down at Saltley certain storm-water filters, but these had not proved quite so useful as was anticipated at the time, and Mr. G. D. Watson, engineer, had recommended to the Board a scheme for dealing with the difficulty. It was proposed to remove the percolation media from certain of the beds on to other beds, so as to make the depth of the media 5 ft. instead of 3 ft., as previously, and new media would be placed in the remaining beds to a similar depth. Close by the existing storm-water filters there were thirty acres of land, and Mr. Watson proposed to use that area for storm-water filtration. In connexion with the storm water proposal, it was necessary to deal with the three main outfall sewers bringing the sewage to the farm. Mr. Watson proposed to carry these outfalls to the back of the present beds at a higher level, to pump the sewage up to that height, and then to take it over the river, through two conduits instead of one as at present. The carrier would be provided with means for cutting off the sewage in times of normal flow, and the sewage would then be conveyed to the various beds for treatment. For the purpose of lifting the sewage to the higher level electric power, which had already been installed, would be used. The beds were to be divided into three separate sections of ten acres each. In answer to the Inspector, Mr. Watson said it was proposed to deal with twice the present dry weather flow by means of gravitation, and four times by pumping, and this method would release a large acreage of land. Mr. Watson also gave evidence as to technical details.

SEWERAGE SCHEME, KESWICK.—The Local Government Board having approved of a scheme of sewage disposal for the town of Keswick, the contract for the work has been let to Mr. J. W. Broadhead, of Purston, Pontefract. The work consists in the construction of an open storage tank at the end of the existing main outfall sewer. Adjacent to this tank the pumping station is to be erected. The sewage will be lifted by centrifugal pumps, driven by gas engines, and delivered at the high end of the works into a receiving reservoir, from which it will gravitate at a slow rate to bacterial tanks and filters, the effluent being finally treated on land. The storm water is to be dealt with separately in specially constructed storm water filters. The works have been designed by Messrs. D. Balfour & Son, consulting engineers, of London and Newcastle.

WATER SCHEME, PENRITH.—At a recent meeting of the Penrith Urban Council a report was read from the Special Water Committee, which recommends the adoption and carrying out of the Glenderamakin scheme as prepared by Mr. Baldwin Latham, the engineer, and that a Bill should be promoted in Parliament for the necessary powers, with clauses giving the Rural Council the privilege of taking a supply for their area from the Urban Council up to 100,000 gallons a day.

Foreign.

ST. PETERSBURG BUILDING AND ARCHITECTURAL EXHIBITION.—Mr. H. Cooke, British Commercial Agent in Russia, writes to the Board of Trade that he has now been officially informed by the Exhibition Committee that the opening of this Exhibition, which was originally fixed for Tuesday next, has been deferred until April, 1907.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The partnership which has existed for some five years between Mr. R. S. Balfour and Mr. W. A. Pite, architects, has been dissolved as from February 24 last.——Mr. Philip Sturdy, architect and surveyor, has removed his offices from 4, Clarendon-buildings, Bournemouth, to 84, Poole-road, Bournemouth (near County Gates).——Messrs. Carter & Banks have purchased the business of Alfred T. S. Carter, Ltd., tile and mosaic manufacturers and builders' merchants, which will in future be carried on at 283, Brockley-road (not 288, as hitherto), and St. Margaret's Works, Brockley.

UNBREAKABLE TIE-BARS AND AXLES.—An invention by Col. Fox, of the London Salvage Corps, is intended to obviate the risk of fracture in the tie-bars of steel structures and the axles of railway rolling-stock. The idea is based on a method of manufacture in which a steel bar constituting the core is surrounded by a series of other bars and the whole welded and forged so as to form a solid mass. As it is highly improbable that a flaw would exist in every bar at the same place it is contended that perfect safety would be assured. To a certain extent bars so made would be produced in a manner similar to that necessarily adopted in the early days of wrought iron, and it may be doubted whether they are wanted in structural engineering, as no evidence exists to show that ordinary steel bars are lacking in reliability.

ESTIMATES (PUBLIC BUILDINGS), 1906-7.—The estimates which have just been issued for the ensuing financial year show a decrease of 8,050*l*. on a vote of 51,800*l*. for the Houses of Parliament. There are votes of 13,340*l*. for official residences of the First Lord and the Senior Naval Lord of the Admiralty; 24,000*l*. for new works, Royal College of Science; 23,200*l*. for the vaccine station at Hendon; and 12,000*l*. for Eskdale Muir magnetical observatory. Other votes relate to the royal palaces:—66,000*l*. (an increase of 3,500*l*.); Osborne House, 16,400*l*. (1,500*l*.); art and science buildings, 70,800*l*. (23,628*l*.); and public buildings in Great Britain, 517,000*l*. (53,000*l*.). The aggregate estimates for public works and buildings amount to 2,790,280*l*., being an excess of 86,247*l*. over the sum for the last year.

HOLBORN TOWN HALL.—The property which the Holborn Borough Council will offer for sale at the Mart on April 9 extends over 12,000 ft. superficial, with frontages to Gray's Inn and Clerkenwell roads. The Town Hall, of which we published illustrations on December 13, 1879, was built after Mr. L. H. Isaacs' designs, and some improvements were carried out since by Messrs. Isaacs & Florence. The building comprises a large concert-hall with galleries, two smaller halls, and a range of offices. At a recent meeting of the Council it was stated that the Hall was valued at 57,116*l*. when the Council took it over from the former Vestry, and that the loans on the building which will mature in March, 1908, amount to 11,574*l*. For the twelve months 1903-4 the income derived from the premises, which are assessed at 1,914*l*., was 4,356*l*., the cost of maintenance being 2,277*l*.

FOAMING GLUE.—It is well known that glues vary very much in the amount of foam they produce when treated with water, and technical chemists have for some time past been endeavouring to discover the causes which induce this objectionable foaming. Two papers have recently been communicated to the Society of Chemical Industry on the subject, and although a method of producing glue which will not foam has not yet

been discovered, some useful information regarding the conditions which affect the foaming has been published. In the paper by Messrs. Trotman & Hackford it is remarked that a glue which foams badly is of little use for making joints, especially if applied by means of a rotatory brush, because the air bubbles which it contains render the joint valueless. Also that in the dressing of fabrics a foaming glue causes an uneven deposit and tends to produce films which, in the case of a net, block the holes and are difficult to remove. Mr. H. J. Watson has found that the longer the glue is exposed to heat during the period of its manufacture the greater is the foam-producing quality of the glue. He thinks that by the selection of good material, and subjecting it to thorough degreasing and cleansing operations, and by reducing the period under heat as much as possible, that a glue which would produce very little foam might be obtained. In the discussion on one of the papers Mr. Garry said that bone glues always foam to a greater extent than skin glues; and that skin glues subjected to a two-hours' extraction always foam more than skin glues subjected to a six-hours' extraction. This statement was not supported by the results obtained by other investigators. It appears to be generally agreed that when the raw material from which the glue is manufactured is not thoroughly cleansed a bad glue, so far as foaming is concerned, is invariably produced.

ASBESTOS-CEMENT TILES.—A use for Portland cement, in combination with asbestos and suitable colouring material, is opened by the slates, tiles, and sheets made by Mr. Charles A. Line, of Birmingham. Asbestos-cement tiles for roofing purposes are made in seven shapes for ordinary, hip, and gable slating—three patterns being square, three oblong, and one triangular, but the corners are cut off in different ways in most of these forms of tile so as to suit different styles of work. Ridge tiles of semi-circular section are also made. The tiles are fixed by means of special cramps, consisting of a zinc disc with a copper pin which is passed through holes pierced for the purpose and turned down over three of the four tiles meeting at one point when the diagonal style of slating is adopted. Ordinary nails are also employed for securing the tiles to the timber battens. For use as a covering for ceilings, partitions, and fire-resisting doors, slabs and sheets of asbestos-cement are made in suitable sizes. Such sheets can be nailed to woodwork, to timber battens or fixing blocks secured to or built into brick walls, or they can be screwed to steel framing. We have applied rough tests to a sample of the tiling 4½ in. square by ¼ in. thick, and find it to be extremely strong. When dropped from a height of about 21 ft. upon stone flagging it was not broken or damaged, and, having been allowed to remain for several hours in a clear fire, it appeared to have sustained no injury. But, having been dropped when red hot into cold water, it became evident that the cohesion of the material was seriously diminished although not to such an extent as to suggest that tiles or sheets of the asbestos-cement would cease to offer effective resistance to fire under ordinary conditions.

GLASGOW ARCHITECTURAL CRAFTSMEN'S SOCIETY.—A meeting of this Society was held on the 23rd inst. at the Technical College, when Mr. Gilfillan read a paper on "Marbles." After giving a statement of what marble really is, he traced the history of marble and marble-work from times biblical, when stones were erected without ornamentation of any description, to the elaborately sculptured work of such famous artists as Michelangelo, Canova, and Carpeaux. Touching at some length on the works of the Egyptians, Persians, Greeks, and Romans, and giving many descriptions of the ingenuity of the marble workers of these ancient days, the lecturer next went on to describe the different marbles found in various countries, finding his greatest scope in Italy, especially in Carrara and the neighbouring towns of Massa and Seravessa. He quoted the names of the best known of the marbles from this district, and gave an account of the places of importance where they had been used, and stated the various purposes for which they had been adopted. Marbles from France, Belgium, Spain, Portugal, Norway, Sweden, America, and the British Colonies were also dealt with, as well as those from the British Isles. The methods of quarrying and handling were also described by Mr. Gilfillan, and a few practical hints as to the best polishes and selection of mouldings to be wrought on coloured marbles brought the paper to a conclusion.

THE "CHUBB" BURGLAR ALARM.—We have received from the General Electric Company, of Queen Victoria-street, a leaflet describing a novel and effectual system of protecting against burglars. The alarms are so constructed that even if the burglar has a fair knowledge of electricity and attempts to short circuit or cut the wires they will still act. If any attempt be made to open the front door with a key or to burst it open the alarm will at once begin ringing, and any attempt to open a window will produce a similar effect. The apparatus for attaching to the safe also acts when any drill or similar tool touches any part of it. A building can be protected in this manner for a comparatively small cost. It seems to us, however, that the more complete any system of burglar protection may be the greater the probability of the accidental alarms which prove trying to people whose nerves are easily agitated.

THE CITY OF LONDON DIRECTORY.—The thirty-sixth annual edition of this useful work has just been issued by Messrs. W. H. & L. Collingridge (148 and 149, Aldersgate-street, E.C.), and, as usual, it has been brought well up to date. The directory contains information in regard to the City of London, the Corporation, the Livery Companies, and other public bodies responsible for the government of Greater London. All the Government changes brought about by the formation of the new Administration are included in the work. The Livery Companies Guide supplies the names and addresses of the masters and Courts of Assistants, engravings of the arms, historical accounts of the companies, a review of their ancient powers and present privileges, particulars of fees, and details of their charities, etc. A full list is given of the members of each company; also an alphabetical list of the whole of the liverymen in the City, indicating the companies to which they belong. The alphabetical list in the directory contains the name, address, and trade or profession of every person or firm, and the floor occupied by them, as in the Streets Section, and the Trades Guide is classified under the various trades or professions. A Biographical Section comprises portraits and biographies of the aldermen and principal officers of the Corporation, the City members of Parliament, and many of the Masters of the Livery Companies. An excellent coloured map is included in the work, which is published at twelve shillings and sixpence.

IRISH SURVEYORS.—In the Parliamentary papers Mr. Field, M.P., asks the Chief Secretary of Ireland whether a candidate for the position of surveyor of buildings has to be nominated by the Board of Public Works, Ireland, before he can compete; whether nominations for these appointments are practically in the hands of the Secretary, and whether he can explain how it happens that out of a total staff of nineteen surveyors of buildings at present employed by this department eighteen are of the same religious denomination.—Mr. Bryce, in reply, states that candidates have to be nominated by the Board of Public Works, but the nominations are in the hands of the Commissioners, who personally examine into the qualifications of each candidate and nominate several candidates for each vacancy. The Board have no knowledge of the religious denomination of their surveying staff, and do not inquire into it.

THE LONDON DISTRICT SURVEYORS.—The following resolution was passed, with but one dissentient, at a general meeting of the Putney Municipal Alliance on Monday, the 19th inst.:—"That the Putney Municipal Alliance strongly deprecates any interference with the status and mode of remuneration of the London District Surveyors, being of opinion that the recent proposals of the London County Council would be disadvantageous to the interests of the public, and irksome to those engaged in building operations, whilst inevitably adding to the burden of the rates. And that a copy of this resolution be sent to the Chairman and Clerk of the London County Council, and to our local members, Messrs. Hunt and Lancaster."

YORKSHIRE AND LANCASHIRE DISTRICT OF THE ASSOCIATION OF SEWAGE WORKS MANAGERS.—The members of the Yorkshire and Lancashire District of the Association of Sewage Works Managers met on Saturday last at Batley. Representatives from most of the towns in Lancashire and Yorkshire were present. Mr. C. H. King (Barnsley) was elected Chairman of the Yorkshire branch, in succession to Mr. Booth (Batley), and Mr. Booth was elected Vice-Chairman, and Mr. Tyson (Queensbury) was re-appointed as Secretary. The visitors were met at Batley Town Hall by the Chairman of the local Sewage Committee (Mr. John Illingworth) and other members of the Corporation, and were shown over the sewage disposal works by Mr. O. J. Kirby, the Borough Engineer. After tea, to which the visitors were entertained by Mr. Illingworth, a meeting was held in the Council Chamber, where the members of the Association were welcomed by the Mayor and the Town Clerk. Mr. Kirby had prepared a scientific paper on the disposal of sewage, explaining the process now in operation at Batley, which was followed by a discussion. The proceedings were concluded with votes of thanks to the Mayor and Corporation, including Mr. Illingworth and Mr. Kirby.

HALIFAX BUILDING TRADES' EXCHANGE.—On the 20th inst., at the Halifax Building Trades' Exchange, the members entertained to dinner their President, Mr. Isaac Firth. In the chair was Mr. Chas. W. Halliday, of Holmfield, and amongst the visitors were Mr. Paul Rhodes, of Leeds (President of the Yorkshire Federation of Building Trades' Employers); Councillor John Dawson, of Huddersfield (Past-President of the Yorkshire Federation); Councillor Julius Whitehead (President of the Bradford Building Trades' Exchange); and Mr. Nevin (President of the Colliery Managers' Association). Councillor John Dawson proposed "The Halifax Building Trades' Exchange." All of them regretted that the stone trade had been so bad, but he asked them not to be disheartened. He was proud to be a builder. It was not one of the most profitable trades, but it was one of the most honourable. There was more expected of builders than of any other trade in the world. It left behind memorials for all time.—Mr. Daniel Sutcliffe, in the absence of the senior Vice-President, Councillor J. S. Hartley, responded. He observed that Halifax, besides being pioneers, was proud to possess one of the most prosperous exchanges in the country. Some of their shareholders might be inclined to complain because there was no dividend. For his part he believed the smallness of the subscription was in itself a very good dividend, and so long as they could make ends meet they ought to be satisfied. Bad trade, he noticed, had resulted in a substantial decrease of the receipts from members.—Mr. C. W. Halliday submitted the toast of the evening—"Our President." It had been his honour and privilege to work with Mr. Firth and a few others since the inception of the Exchange. Never since its commencement had there been a more zealous and interested worker than Mr. Firth.—Mr. Firth, in reply, said that formerly builders used to have to visit six hotels in the course of an evening to interview traders. The first Exchange was formed at the Junction Hotel, and subsequently the present building was occupied.—Councillor T. S. Dodd proposed the toast of "The Visitors," and responses were made by Mr. Rhodes, Councillor Whitehead, Mr. Nevin, and Mr. Wigham.

BATTERSEA COUNCIL AND DILAPIDATIONS.—The Law Committee of Battersea Borough Council, reported on Tuesday evening as to what further powers were necessary to deal more effectively with dilapidations, such as those which caused a death in Culvert-road (where the staircase was in a dangerous condition, the treads being very much worn, and the stairs not provided with a handrail). The Committee suggested—(1) That the Health Committee should, under the Public Health, London, Act, 1891, make arrangements for a stringent inspection of those parts of the borough in which such nuisances occur, and (2) that a conference be held between the Law and Parliamentary Committee and the Health Committee with the view of bringing the matter before the Local Government Board, so that the hands of Councils may be strengthened.

NO. 48, ST. JAMES'S-STREET AND THE WIDENING OF PICCADILLY.—The Westminster City Council, at their meeting last week, resolved to make a special contribution, subject to the computation of an estimate by the Finance Committee, towards the cost of the proposed widening to at least 80 ft. of Piccadilly west of St. James's-street, where the premises are about to be rebuilt. One of the houses to be pulled down at the corner of Piccadilly is No. 48, St. James's-street, latterly the Royal Insurance Office, built in 1857-8 for the Sovereign Life Assurance Company by Pritchard & Co., for 45,000*l.*, after designs by Sir Horace Jones, and illustrated in the *Builder* of April 18, 1857. The upper part of the façade is of Bath stone, the front of the ground and mezzanine floors, with the cornices and dressings, being of Caen stone. The carving was executed by Mr. William Farmer.

Legal.

WEST-END ANCIENT LIGHT CASE.

IN the Chancery Division on the 26th inst., Mr. Justice Joyce delivered judgment in the case of Fryzer *v.* Windus and others.

In this case the plaintiff, Mr. Alfred Fryzer, the sub-lessee of a building called Cavendish Chambers, Hallam-street, W., sued the defendants, Mr. James Windus, Mr. W. S. Hoare, and Messrs. E. Lawrence & Sons, builders, to restrain them from continuing the erection of new buildings in Great Portland-street, being at the back of the plaintiff's premises, so as to cause a nuisance to the plaintiff or his premises, and from injuring, darkening, or obstructing the access of light through a skylight, and certain windows in the plaintiff's premises, as the same were formerly enjoyed, and an order to pull down so much of the buildings as were higher than the old buildings which formerly stood on the site. There was also a claim for damages. The statement of claim alleged that the height of the defendants' old buildings was 48 ft. from the ground level, and 20 ft. from the party-wall, and that defendants had erected on the site a new building consisting of shops, warehouses and tenements, the rear walls of which were about 60 ft. in height and only about 10 ft. from the party-wall. Plaintiff alleged that the effect of this was to cause a substantial decrease of light coming to the lights and windows in question, and was such as to render his house uncomfortable according to the ordinary notions of mankind. There was also

a claim for trespass in connexion with the party-wall.

By their defence the defendants denied that their new buildings had, or would, cause any nuisance to the plaintiff as alleged, and that they would to any appreciable extent affect the plaintiffs' light, or interfere with the comfortable enjoyment by the plaintiff or his tenants of the premises. (The case was reported in the *Builder* of March 3 last.)

Mr. Hughes, K.C., and Mr. Crossfield appeared for the plaintiff, and Mr. Younger, K.C., and Mr. Edward Ford for the defendants.

In giving judgment his lordship said that by the action the complaint was of a two-fold nature. The first was as to the erection by the defendants of the party-wall above the height which the plaintiff authorised them to raise it, and which it was alleged on behalf of the defendants was done in error. However that might be, it was clearly unwarrantable, but as during the trial the defendants had offered to take it down, it was not material for him (his lordship) to say anything more about it except perhaps on the question of costs. The other complaint was as to the obstruction of light to certain windows in the plaintiff's building. On the hearing of the motion for an interlocutory injunction it was agreed as regarded the plaintiff's claim for a mandatory injunction the rights of the parties were to be the same as if the trial had taken place at the date of the motion, and that his lordship should assume that the defendants' new buildings were then in the condition shown on the ground plans and elevation. The plaintiff was an under-lessee for the residue of a not long term of years—seven years from December, 1904. His immediate reversioner was not a party to the action, and the ultimate reversioner was the ground landlord of the defendants as well as of the plaintiff. That gentleman did not desire to have any part of the defendants' building removed, and his lordship thought that under the circumstances the plaintiff could be properly compensated by damages being awarded to him if he was entitled to any relief. His lordship having specifically described the windows in the plaintiff's building alleged to have been affected by the defendants' buildings, said he came to the conclusion that none of the plaintiff's windows, or the rooms lighted by them on the ground and first floors, were ever specially well lighted in any sense, or more than sufficiently lighted for the ordinary use and occupation of rooms in a dwelling-house or flats. He thought that really the light was deficient according to the notions of ordinary people. He was of opinion that the light to the studio through its only light—the skylight—had been greatly diminished by the defendants' new buildings. The defendants by their new buildings had not only obstructed a considerable amount of light coming to the room, but they had rendered it less comfortable, and had made it unfit for the immediate purposes for which it was formerly used. With regard to the window "K," that was the only window lighting a bed-room on the ground-floor in the plaintiff's building, it would be idle to say that that room had ever been well or sufficiently lighted. The light to it had always been obstructed. Some of the witnesses alleged that the room, although badly lighted, was sufficiently lighted for a bed-room. His lordship said that the room had always been a dark room, and by reason of the defendants' buildings the light coming to the upper portion of the window had been further diminished, and actual damage thus occasioned to the plaintiff. The window "C" on the first-floor lighted the staircase, and "D" was a window lighting a water-closet and bath-room. These windows had been rendered darker by reason of the defendants' new building. The rear room on the first-floor was lighted by the windows "A" and "B," the room being at present unoccupied. He found that this room was never well lighted. It was dark before and uncomfortably dark now by reason of the defendants' buildings, and the room thus rendered less comfortable. His lordship, having referred to the other windows in the plaintiff's building said to have been affected by the defendants' new buildings, said he was of opinion that what the defendants had done could fairly be held to be a nuisance, and he so decided. He must award the plaintiff some damage, and he fixed the amount at 120*l*., and the defendants must pay the costs of the action.

Mr. Younger, on behalf of the defendants, agreed to pull down the portion of the party-wall which was too high within three weeks.

BUILDING DISPUTE IN ST. MARTIN'S-LANE.

THE case of Borwick *v.* the London Coliseum, Ltd., came before Mr. Justice Grantham, sitting by consent without a jury in the King's Bench Division this week, an action by the plaintiff for damages for alleged breach of an agreement.

In this case the plaintiff is an engraver, and carrying on business at No. 42, St. Martin's-lane, W.C., the defendants being the owners of the adjoining premises, No. 41, St. Martin's-lane. In June, 1904, it was alleged defendants began to pull down the premises on the site of No. 41, and thereby deprived plaintiff's premises of the support of No. 41, and caused the party wall to crack and become unsafe. In consequence of these matters a dispute arose between the parties, which was compromised by letters of July 14 and August 6, 1904, when it was agreed between the plaintiff and the defendants that the defendants should rebuild the wall on the following terms, viz. :—(*a*) That the work should not be begun until the specification and plans had been approved by the plaintiff; (*b*) that all damage done in making the proposed alterations should be made good at the defendants' expense, even to rebuilding if necessary, and including repapering and painting the parts affected by the alterations; (*c*) that the defendants should erect a partition to enable the plaintiff to carry on his business during the alterations; and (*d*) defendants to pay the plaintiff's surveyors' and solicitors' charges. Plaintiff said it was an implied term of the agreement that the work should be completed within a reasonable time. In breach of this agreement plaintiff alleged that the defendants had pulled down the said wall and started the work before the plans and specification had been approved by him, and so negligently erected the partition to be erected that the plaintiff was unable to carry on his business or reside at the premises, owing to the dust, draught, and damp, and plaintiff had to remove his business, and therefore, as he said, had suffered considerable loss. In further breach of the agreement plaintiff said the defendants had not made good all damages done by the alterations, and put the shop or fittings or fixtures into the proper condition for carrying on the business. Plaintiff claimed 700*l*. special damages, including 300*l*. for loss of trade and business.

Defendants, by their defence, denied that they were guilty of any wrongful acts. They said that any work done by them in or about the premises in question was executed by them in accordance with a notice duly served by them upon the plaintiff in December, 1903, and also under the powers conferred upon them as building owners by the London Building Act, 1894. Defendants denied that they had deprived the plaintiff's house of support, or caused the party wall to crack or become unsafe as alleged. Defendants admitted that after the dispute arose a compromise or agreement was arrived at, but they denied that those terms were according to those set out by the plaintiff. Defendants admitted the terms numbered *b*, *c*, and *d*, and said they were part of the terms arrived at, but they denied that there had been any breach of *b* or *c*, and further said with regard to *d* that they had always been ready and willing, and still were ready and willing, to pay all the proper charges of plaintiff's solicitors and surveyors, but no accounts had yet been rendered. In the alternative defendants said that if no compromise was arrived at plaintiff's remedy was by arbitration in accordance with the provisions of the London Building Act, 1894. Defendants contended that the items of 300*l*. odd claimed by plaintiff for loss of trade and business, and expenses of having to remove elsewhere, were not recoverable in law. Defendants brought the sum of 150*l*. into court, and said that the same was sufficient to satisfy the plaintiff's claim.

Mr. English Harrison, K.C., and Mr. Colam appeared for the plaintiff, and Mr. Foote, K.C., and Mr. T. Humphreys for the defendants.

After hearing a great deal of detailed evidence, and the addresses of counsel, his lordship, in giving judgment, said the case ought never to have been brought into that court for trial. The defendants had endeavoured to persuade the plaintiff to have the case referred, but, as the plaintiff refused, it thus came on for trial before him. There was very little law in the case, practically the whole thing being a question of account. With regard to the case itself it was not free from difficulty. He thought he ought to say that so far as the defendants were concerned they had behaved in a very liberal manner, and they had done everything which honourable people should do in the peculiar circumstances in which they were placed. The result of what had been done was that the freeholder of No. 42 had been very much benefited. He also thought that the plaintiff (the leaseholder) had also been benefited by having a better house, now that it was finished, than it was before. He (his lordship) had been to the place to look at it, and he quite agreed that the plaintiff had been benefited by having now a good corner house and a good shop and a wall very well built. But that had nothing to do with the case. Defendants could not rely on the fact that they had been obliged to benefit the plaintiff. It was very hard that the plaintiff, who had been there for a good many years, should be disturbed in his occupation of the house. One could quite understand that the party wall was a perfectly good party wall, while it was up. The moment the defendants pulled down the house, leaving only the party wall, the plaintiff might be prejudiced very materially, and the plaintiff's solicitors were quite right in trying to protect their client as much as possible. He had no doubt that the plaintiff was damaged more than expected, and that by what was done he did suffer in his casual trade. Plaintiff made no claim with regard to his general trade. He did not think that the work was carried out in its entirety as it was intended to be. He came to the conclusion that the partition was not done as it might have been done to protect the plaintiff from injury. He thought that it was badly done, and did not keep out the dust and damp. He was of opinion that the defendants were liable for some of the loss which the plaintiff had sustained. He considered, however, that the plaintiff's claim was an extravagant one. He could not hold that the plaintiff was entitled to the large sum he claimed for loss of trade, but he believed there was a loss of trade. On the whole he thought the plaintiff was entitled to judgment for 280*l*., which included the 150*l*. paid into court. That would mean that there would be judgment for the plaintiff for 130*l*. above the 150*l*. paid into court, which amount the plaintiff would take out of court.

Order accordingly.

NUISANCE TO PROPERTY BY NOISE AND VIBRATION.

THE case of Hawkins *v.* Nichols came before Mr. Justice Buckley in the Chancery Division on the 28th and 29th insts., an action by Mr. H. J. Hawkins and his wife against the defendant, Mr. Jas. Nichols, for an injunction restraining the defendant from carrying on the business of a saw-mills in such a way as by reason of the noise and vibration and the violent and disgusting language of the men employed by the defendant or otherwise as to cause a nuisance or injury to the plaintiffs and their property. There was an alternative claim for damages. The defence was a general denial of the allegations of the plaintiffs.

Mr. Duke, K.C., Mr. Hamilton, K.C., and Mr. Wilkinson appeared for the plaintiffs, and Mr. Buckmaster, K.C., and Mr. Sargant for the defendant.

Mr. Duke, in opening the case, said the plaintiffs resided at Brookside, near Barnes Common, and their premises adjoined the defendant's saw-mills and timber-yard. The action was brought in respect of a nuisance and noise. Plaintiffs were the owners of house-property in Barnes, and they themselves occupied one of these houses. Defendant was a neighbouring owner. At the end of 1900 the defendant set up immediately at the back of the plaintiffs' premises a saw-mills and joinery-yard on a large scale, and had converted residences and houses which were quiet residences into places where now it was impossible to enjoy quiet and comfort. Defendant was the owner of a house called the "Grove," plaintiffs' house was of a rental value of about 100*l*. a year. Plaintiffs were also the owners of the surrounding houses, let at about 40*l*. a year. The neighbourhood was essentially a residential one, and he contended that to establish this factory as the defendant had done would entirely upset the whole character of the district. Mr. Mills occupied an acreage of 2½ acres, and was equipped with modern and up-to-date appliances for the business. Defendant had several machines running, and this caused a substantial nuisance as the mills seemed to be constantly in operation. Besides that there was vibration caused by the running of the machinery and the constant hammering of men in the joinery works. Plaintiff also complained of the bad language used by the men. Defendant had offered, and had erected a wall 14 ft. high to mitigate the nuisance complained of, but it had been found ineffective. Defendant had offered to erect a wall 22 ft. high on plaintiffs' own property, but this offer had been declined.

His lordship said he thought the offer reasonable. Defendants were entitled to have saw-mills and joinery works, but not to cause a nuisance to the neighbourhood. Plaintiffs' only proposition appeared to be to close the works.

Mr. Duke said he was not instructed to ask for anything less than the closing of the mills.

His lordship said that that appeared to be too large a proposition.

Evidence was then called in support of plaintiffs' case.

After hearing evidence on behalf of the defendant, his lordship, in giving judgment, said the question he had to determine was whether the defendant's acts on his land had been such as to create a legal nuisance. He was not satisfied at all with the evidence given by the plaintiff's witnesses, the evidence being greatly exaggerated. He thought the defendant had acted in a perfectly straightforward and honest way, and that the case against him was to a great extent imagined. The conclusion at which he arrived was that it was not a *bona-fide* action. He thought it was brought for the purpose of compelling the defendant to pay the plaintiff a sum of money. He came to the conclusion that it was a dishonest action, and dismissed it with costs.

THE COMPOSITION OF MORTAR.

MR. BAGGALLAY gave his decision at Greenwich Police Court on Wednesday in the matter of the summonses, issued at the instance of the London County Council, against Messrs. H. & G. Taylor, builders, of Boyne-road, Lewisham, alleging

that they had used in the construction of certain houses mortar not in accordance with the Council's by-laws. The point in which the mortar was said to fail was that it was not composed in the proportions of one part of lime to three parts of other materials.

Mr. Baggallay said he found as fact that the mortar used was in the proportion of one of lime to three of sand or grit if the proportions were measured with slaked lime—that if unslaked lime had been used for the purpose of measurement the proportions would have been about one to five. He also found evidence that many leading builders used slaked lime as the basis of measurement in the composition of mortar, and—a third fact—that this particular mortar was good enough for the purpose for which it was employed. There was a further question however, in regard to the by-law, it having been argued that it was bad, as nobody could understand what it meant. Mr. Macmorran had contended that it must be so clear that anyone looking at it would know what it meant. He would not go as far as that, but he did think it ought to be so clear that the ordinary builder could know what it meant, and the evidence had satisfied him that the ordinary builder did not know what the expression "lime" meant—it might be either slaked or unslaked. The by-law ought to show clearly whether the proportions to be taken were of slaked or unslaked lime. It was not enough to say that the proportion of lime should be one in three, but it ought also to be stated what condition the lime should be in, whether slaked or unslaked. He was inclined to hold that the by-law was bad on that ground, but even if it were good it did not seem to him an unreasonable construction to put upon it, that the lime should be slaked before measurement. He dismissed the summons with 50*l.* costs. The case had been taken upon one summons of several, and he deferred his decision upon the others until Mr. Bodkin, who appeared for the London County Council, had decided whether he would ask for a case to be stated.

Mr. W. P. Neal, solicitor, was for the defendants.

Patents of the Week.

APPLICATIONS PUBLISHED.*

5,272 of 1905.—W. H. BODIN: *Baths, Lavatory Basins, and Sinks.*

THIS relates to baths, lavatory basins, and sinks, and consists of runners, forming gutters, at the sides of the bath, and emptying into an outlet pipe at the end of the same, and a cover made in two or more parts shaped so as to drain into the gutter, and adapted to slide under the lavatory basin when the latter has been slid along the bath to the foot end of the same.

5,514 of 1905.—R. ZELLENKA: *A process for Making of Foundations and Bond in Laying Stone Blocks, Bricks, and Masonry.*

This invention relates to a process for making a binding material for foundations, in which broken up stones, clean and sharp sand, pebbles, slag, and the like are mixed with a binding material made from finely ground sulphur or pyrites and ferriferous sand, and the mixture heated in a suitable vessel to a temperature of about 150° C.—180° C., whereby the binding material melts to a thin liquid, thus completely filling up interstices between the stones or pebbles or the like, covering the same perfectly, and forming of the whole a plastic mass of similar properties to concrete, which mass can be rammed or stamped in moulds or between boards to any shape or form and for any kind of foundation work. After a few minutes the mass sets to a hard structure, which is at once able to stand against heavy pressure.

9,180 of 1905.—W. S. THOMPSON: *Cranes.*

This relates to cranes, and consists in the combination of a slidable clutch on the crank shaft, which has mounted on it a spur pinion of a diameter greater than that of the main spur pinion, with a spur wheel on the barrel shaft of a diameter less than that of the main spur wheel, and a hand lever for actuating said clutch.

9,615 of 1905.—R. DUNCAN: *Coin Freed Locks for Lavatories, Water-closets, and the like.*

This relates to coin freed locks for lavatories, water-closets, and the like, which may be operated by one key when the indicator reads "vacant," and consists in the combination therewith of means whereby the entrance can also be effected by a different or master key when the door is bolted and the indicator reads "engaged."

10,005 of 1905.—J. CALLIE: *Windows.*

This relates to a collapsible ventilating hopper for windows, consisting of a main pivotted part and pivotted side parts articulated to the said main part so that they open and close therewith, the axes about which the said parts pivot being inclined to the vertical, so that the edges of the side parts coincide, when the hopper is open, with the edges of the main part, and so that when the hopper is closed the necessary leverage to open the side parts is provided: the construction being such that the main part may be disconnected from the side parts for the purpose of cleaning or removal.

10,367A of 1905.—S. BEAL: *Mixing and Timing Rakes, or apparatus for Water and other Liquids for use in Shower or other Baths, and such like applications.*

This relates to a mixing valve or apparatus provided with a timing cylinder, for the purpose of cutting off the supply after any given interval, following the opening of the valves, even against the will of the bather. A further supply of water can only be passed or obtained after a second or longer period has elapsed following the automatic closing of the valves.

16,388 of 1905.—A. T. LINDERMAN: *Lumber Joining Machines.*

This relates to a machine for joining lumber, and consists of oppositely moving carriers, the section or carriages whereof are provided with normally depressed dogs for pushing the stock, in combination with automatic selecting mechanism for positioning the proper dogs for action, and means for tripping the dogs automatically. The invention further consists of a rapidly rotating cutter mounted upon an inclined arbour, said arbor having its bearings located eccentrically in a cylindrical casing capable of a turning adjustment and a spring actuated ejecting device consisting of an arm lying normally in the path of, and positioned for action by the lumber.

11,822 of 1905.—W. E. HIPKINS: *Weighbridges.*

This relates to weighbridges, and consists of a rocker bearing consisting of two U-shaped end pieces connected by a bridge piece, preferably formed in one with the said end pieces, said bridge piece containing or forming the bearing steel of the knife edges of the main levers, the said bridge piece being recessed back to allow the legs or verges of the weighbridge to be supported by the upward projections in the hollows of the U-pieces.

15,014 of 1905.—S. H. ADAMS: *Flushing Arrangements for Water Closet Basins.*

In this invention a ridge or projection is formed at the entry to the trap, which causes the water to leap into the trap, and having passed this ridge or projection, which may go around the closet-pan if desired, the matter will very readily pass through the trap, because there will be an immediate widening of the trap after the ridge has been passed.

26,963 of 1905.—E. BRADBURY: *Spigot and Socket Earthenware Pipe Joints.*

This invention relates to a spigot and socket earthenware pipe joint, and consists in the combination of a notched or recessed annulus in the socket having its back face formed with inclines, a spigot with exterior lugs set back from the end of the spigot, a ring on the end of the spigot, and a ring in the interior of the socket with which it is adapted to engage. The invention further comprises a facing ring on the shoulder of the socket, and a ring on the end of the spigot wide enough to fill up the space between the spigot and the annulus when the joint is made.

8,392 of 1905.—W. P. INGHAM: *Bricks or Blocks for Building, Paving, the Construction of Floors, or other purposes.*

This relates to a brick or block for paving, the construction of floors, or other purposes, having longitudinally inclined planes upon only two opposite sides or ends, or faces thereof, arranged diagonally or in opposite directions so as to cross one another, thus constituting tapered flanges or shoulders adapted when the bricks are placed side by side, end to end, or face to face, to interlock with the next adjacent bricks in the same course or row.

18,242 of 1905.—T. W. ADSHEAD: *Fenders and Curbs for Fireplaces.*

This relates to a dog-onded fender or curb in which the dogs are tied to the base of the article and thereby braced or stiffened by means of a curved or dropped rail, whose extremities are connected to the fronts of the dog ends, whilst the middle part of the same is attached to the front of the base, and consists in securing the middle of the dropped bracing rail to the front of the curb or fender base by an ornamental connexion.

24,750 of 1905.—A. C. BREWERTON: *Roofing Tiles.*

This invention relates to roofing tiles, and consists in a process of "ageing" tiles, so that a new tile shall have the appearance of an old tile. According to the invention the upper surface or tile whilst still in the state of clay and before baking is sprinkled and scrubbed with sand either by hand and a brush or by machine. In one way of carrying out this invention, the upper surface of the clay as it leaves the mill in the process of tile making in the form of a flat band is sprinkled and scrubbed with sand either by hand and a brush or by a machine. The sheet is afterwards cut into tiles and baked in the usual manner. The sand may be contained in a hopper attached to the mill and be supplied continuously on to the band, and a brush may be continuously reciprocated across the band.

24,969 of 1905.—F. M. H. JONES: *Building Block.*

This relates to a building block having a groove upon the sides and bottom chamber or recesses within the sides, a projection upon the top of an outline corresponding to the channel upon the bottom, but of such dimension as to leave a space between it and the said projection, which is filled with cement or the like, and channels upon the edges of the block.

17,922 of 1905.—A. H. CORN: *Domestic Fireplaces.*

This relates to an open domestic fireplace, and consists in the combination of a removable heat-resisting frame having a hole or orifices through its sides supporting a back and a removable metallic grid with heat-resisting blocks having a channel or passages through same with a rotatable or slidable metallic shutter fitted to their inlet end, and built or erected upon a heat-resisting base, the upper surface of which is level or nearly level with the flooring of the room.

4,758 of 1905.—D. M. NESBIT: *Steam Heating Systems and Apparatus employed therewith.*

This relates to a heating system including a combined heater and condensor, and consists in the combination of an auxiliary coil in the jacket of the condenser or in a water chamber in connexion therewith, and a thermostatic device, influenced by the heat of the water in the jacket, for automatically controlling the supply of live steam to said coil.

5,765 of 1905.—THE ASSOCIATED PORTLAND CEMENT MANUFACTURERS, LTD., H. K. G. BAMBER and G. R. M. LAYTON: *Manufacture of Portland Cement.*

This relates to the manufacture of Portland cement, and consists in the combination of two rotary kilns, the space intervening between the two being so cased in that the hot gases from the lower pass into the upper, and a mixing or grinding machine for acting on the raw material, between its delivery from the upper and its entry into the lower.

12,133 of 1905.—D. MCINTYRE: *Floors of Buildings.*

This relates to the construction of floors for buildings in which the flooring boards are carried by auxiliary or floating joists placed in between the main joists and supported by metal straps extending over said main joists, the latter being kept under the level of the flooring boards, and cushioned pads being interposed between the straps and the joists.

4,194 of 1905.—A. J. BOULT (M. REICHE): *Process for Manufacturing Hydraulic Binding Substances or Cements.*

This relates to a method of manufacturing binding substances containing water, and is characterised by causing hydrate of lime, in proportions suitable for forming cements, to act on cement-forming oxides or hydroxides or salts in a finely-ground floury condition in the presence of water in an atmosphere of high pressure, or, if desired, super-heated steam, until the complete or nearly complete opening up of the fine meal takes place.

7,043 of 1905.—K. H. WOLMAN: *Composition Matter for Impregnating Wood.*

This relates to a composition matter for impregnating wood, consisting of such mixed solutions of salts of strong mineral acids and of weak organic acids as are capable of existing together in a solution, the mixture being so composed that when the basic salts are formed no strong mineral acid is liberated. In a modification of the invention ammonium acetate is used instead of the weak organic acid.

20,085A of 1905.—A. G. BAGOT: *Apparatus for Extending or Exhibiting Maps, Charts, Rolled Drawings, or the like.*

This invention comprises a cylindrical casing containing a number of spring rollers constructed preferably of a corresponding number of longitudinal strips pivotally mounted in end plates and normally urged by suitable springs to close on each other and form a continuous envelope or casing. By raising one or other of the strips, the roller of the corresponding map may be withdrawn from or admitted to the casing. The cylinder itself is journalled in the end plates of a protective casing, and this is conveniently done by entering the ends of the cylinder spindle in slots in the end plates and securing them by spring catch hooks. The casing is supported automatically by a rod attached thereto, and stepped in a socket tube which may be fixed to the floor, front, or side of the vehicle by suitable means. The rod is urged upwardly by means of a spring, and the elevation of the casing is controlled and its upward movement checked by a spring trigger or other suitable device. To prevent rotation of the casing about the axis of its support the rod and socket tube may be of a section other than circular, or a transverse pin in the rod may be arranged to move in a longitudinal slot or guide way in the tube.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

List of Contracts, etc.

(For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, xix.; Auction Sales, xxxii.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.)

BUILDING AND ENGINEERING.

APRIL 2.—BRADFORD.—ALTERATIONS.—For various works required in sundry alterations to the Bradford Church Institute. Plans may be seen and quantities obtained at 42, Tyrrel-street, Bradford, until Monday, April 2, when tenders are to be delivered to T. H. & F. Healey, architects.

APRIL 2.—LEEDS.—SHOP PREMISES.—For the whole or any of the several trades, viz., excavator's, bricklayer and mason's, carpenter and joiner's, shopfitter's, plumber and glazier's, painter's, slater's, ironfounder's, and concretor's work required in the erection of block of shop premises at Hyde Park Corner, Leeds, for Mr. Joseph Pickersgill. Names to Messrs. Thomas Winn & Sons, architects, 84, Albion-street, Leeds, on or before April 2, when bills of quantities will be duly forwarded.

APRIL 3.—BELFAST.—WATER TANK.—The enlargement of a cast-iron water tank at Ormeau-avenue Baths, and alternative tenders for the erection of a new tank, for Belfast Baths and Lodging-House Committee. Form of tender, etc., on application at the City Surveyor's Office. Sealed tenders, endorsed "Tender for Storage Tank," to Mr. R. Meyer, chief clerk, by April 3.

APRIL 3.—EDINBURGH.—WALL.—A retaining wall at the Queensferry-road, on the estate of Blinkbonny. Schedules of quantities may be obtained of R. Morham, City Architect, Public Works Office, City-chambers, Edinburgh. The estimates must be sent by 10 a.m. prompt on Tuesday, April 3, sealed and marked "Tender for Retaining Wall at Queensferry-road."

APRIL 4.—BADMINTON.—RECREATION HALL, SCHOOLS, ETC.—A recreation hall, schools, cottages, etc., at Badminton, Gloucestershire, for the Badminton Estate. Names by April 4, to Mr. Frank W. Wills, F.R.I.B.A., 8, St. Stephen-street, Bristol. Bills of quantities supplied upon payment of the sum of 1l.

APRIL 4.—BARNSLEY.—HOUSE.—House to receive the chalk-mixing apparatus, etc., for Midhope filter-beds, for the Corp. Forms of tender, etc., may be obtained (on payment of two guineas) on application at the office of Mr. J. Henry Taylor, Manor House, in Barnsley, and at the offices of Messrs. T. & C. Hawksley, Civil Engineers, 30, Great George-street, Westminster, S.W. Tenders must be delivered at the office of the Town Clerk by April 4.

APRIL 4.—CAERLEON.—SHELTERS.—Materials and erection upon the Newport Borough Asylum, Caerleon, Mon., Estate of four airing court shelters. Plans and specifications may be seen at the Asylum. Tenders, endorsed "Airing Court Shelters," must be delivered, addressed to the Visiting Committee, Newport Borough Asylum, Caerleon, Mon., by April 4.

APRIL 4.—INVERARY.—SCHOOL.—Mason, joiner, slater, plumber, plaster, and painter work (either for the whole or separate) of proposed new school in the burgh of Inverary, for School Board. Plans and specifications may be seen at the Office of the Clerk, National Bank, Inverary, and copies of the schedule of quantities may be obtained from him on payment of a fee of five shillings. Sealed offers, marked "Tender for New School," to be lodged with Alaster Macarthur, Clerk to the Board, Inverary, on or before April 4.

APRIL 4.—PORTLAND.—JUSTICE-ROOM.—A justice-room, adjoining the Police-station, at Portland, for the Dorset Standing Joint Committee. Forms of tender, etc., obtained from the County Surveyor, at his office, Wimborne, or at the Shire Hall, Dorchester. The sum of two guineas will be charged for the bills of quantities. Tenders, marked "Justice-Room, Portland," must be sent to E. Archdall Flooks, Clerk to the Standing Joint Committee, County Council Offices, Sherborne, on or before April 4.

APRIL 4.—STOKE.—REPAIRS TO WORKHOUSE.—Repairs to the workhouse buildings, for Stoke-upon-Trent Guardians. Specifications, etc., from Mr. C. Daniel, Clerk to the Guardians, Union Offices, Stoke-upon-Trent. Tenders, marked "Repairs," to be delivered by 9 a.m. on April 4.

APRIL 4.—TATWORTH, CHARD.—SCHOOL.—New infants' school at Tatworth, for Somerset County Education Committee. Drawings, specifications, and conditions of contract may be seen at the Chard Tatworth Council School, and bills of quantities and forms of tender obtained from Messrs. Samson & Cottam, 43, High-street, Bridgwater, on depositing one guinea. Tenders, endorsed "Tatworth Infants' School," must be delivered at the County Education Office, Weston-super-Mare, not later than April 4.

APRIL 4.—WITHINGTON.—ALTERATIONS, ETC., TO WORKHOUSE.—Additions and alterations to the lunatic wards at the Withington Workhouse, for the Guardians of the Poor of the Choriton Union. Plans, etc., may be seen, and bills of quantities obtained, at the offices of Messrs. Charles Clegg & Sons, architects, 21, Spring-gardens, Manchester, upon payment of 1l. 1s. Sealed tenders to be delivered to David S. Bloomfield, Clerk to the Guardians, at the Union Offices, All Saints, Manchester, not later than 12 a.m. on Wednesday, April 4.

APRIL 5.—BATH.—CHURCH.—New U.M.F. church, etc., Shakspere-avenue, Bath. Plans, etc., on application to Rev. H. Walker Blott, 28, Devonshire-buildings, Bath, to whom tenders have to be delivered not later than 1 p.m. Thursday, April 5. Quantities obtained from Mr. W. Hugill Dinsley, architect, Chorley, Lancashire, on deposit of 10s.

APRIL 5.—EDINBURGH.—WALL.—Retaining wall at Western-terrace, Murrayfield, required in the widening of the public road, for the magistrates and council of the City of Edinburgh. Specifications and schedule of the measurement may be obtained from Mr. James Massie, Burgh Engineer, 1, Parliament-square, who will exhibit the plans and give all information. Sealed tenders, endorsed "Tender for Retaining Wall, Western-terrace, Murrayfield," must be lodged with Mr. Thomas Hunter, W.S., Town Clerk, City-chambers, by April 5.

APRIL 5.—PONTLOTTYN.—CONVERTING.—Converting present premises into three shops at Pontlottyn for Mr. M. Morgan, Railway Inn, Pontlottyn. Plans and specification can be seen at the office of Mr. T. Roderick, architect, Ashbrook House, Aberdare. Endorsed tenders to be sent in to Mr. Morgan not later than April 5.

APRIL 5.—WOODBRIDGE.—VENTILATION AND ALTERATIONS.—Ventilating and making small alterations to Board Room at Woodbridge, for the Woodbridge Guardians. Plans and specifications of the proposed work may be seen at the office of Messrs. Brown & Burgess, Architects, Arcade-street, Ipswich. Tenders, sealed and endorsed "Alterations to Board Room," to be delivered at the Board Room on April 5.

APRIL 6.—CROSTHWAITE AND THRELKELD.—BRIDGE.—A stone skew bridge, of 30 ft. square span, at an angle of 40°, across the Glenderamackin, in the parishes of Crosthwaite and Threlkeld, within a quarter of a mile of Threlkeld Railway Station, C.K. and P. Railway, for the Highways and Bridges Committee of the Cumberland County Council. Specifications may be seen and particulars obtained at the office of Geo. Jos. Bell, M.Inst.C.E., County Surveyor and Bridge Master for Cumberland, The Courts, Carlisle. Sealed tenders, endorsed "Townfield Bridge," addressed to the Chairman of the Highways and Bridges Committee, must be delivered by April 6.

APRIL 6.—EAST GRINSTEAD.—REPAIRS, ETC.—New works repairs, painting, decorating, and ventilating in connection with Wesleyan Church, East Grinstead, for the Trustees. Specification and further particulars may be obtained on application to Mr. H. Criswell, 57, Queen's-road, East Grinstead. Tenders, endorsed "Tender for Painting," to be sent to Rev. J. G. Gill, "York House," East Grinstead, not later than 10 o'clock, April 6.

APRIL 6.—NARBOROUGH, ETC.—BRIDGES.—A brick and concrete bridge, 30 ft. span, over the River Soar, near Narborough, and a similar bridge, 20 ft. span, over a stream at Little Bowden, near Market Harborough, for the Highway Committee of the Leicestershire County Council. Forms, etc., from the County Engineer, Mr. S. Perkins Pick, 6, Millstone-lane, Leicester, on payment of the sum of one guinea (1l. 1s.) for the quantities of each bridge. Tenders to be sent to Mr. George Rowlatt, Clerk to the Highway Committee, 10, New-street, Leicester, not later than 10 o'clock in the forenoon of Friday, April 6, endorsed (a) "Tender for Enderby Mill Bridge," (b) "Tender for Little Bowden Bridge."

APRIL 7.—BRADFORD.—ALTERATIONS.—Alterations and renovations to the Old Dolphin Wesleyan Chapel, Clayton Heights, near Bradford. Plans, etc., may be seen, and quantities obtained, at the office of Mr. Sam Spencer, architect, Old Bank-chambers, Gt. Horton, Bradford, from Monday, April 2, to Saturday, April 7.

APRIL 7.—RUSWARP.—HOUSES.—For erection of a pair of semi-detached houses to be built at Ruswarp, in Whitby, for Mr. H. B. Bell. Plans, etc., at the office of Mr. Edward H. Smailes, A.R.I.B.A., architect, 5, Flowergate, Whitby. Tenders to be sent in by noon on April 7.

APRIL 9.—DARTFORD.—POLICE STATION.—The enlargement of the county police station at Dartford, ordered by the Standing Joint Committee, form, etc. on deposit of 2l. at the office of the County Architect, 86, Week-street, Maidstone. Tenders, endorsed "Dartford Police Station," are to be delivered to Mr. Charles Turner, Clerk, Sessions House, Maidstone, not later than April 9.

APRIL 9.—KINGSTON.—PREMISES AND WORKSHOP.—For pulling down old premises and erection of new offices and workshops for Messrs. Knapp, Drewett, & Sons, Ltd., of Kingston-on-Thames:—(a) New premises for the *Surrey Comet* offices, at No. 20, Clarence-street, Kingston-on-Thames; (b) new workshops on land at rear of No. 18, Church-street, Kingston-on-Thames (adjoining above-named premises). Information by Mr. William H. Hope, C.E., Architect and Surveyor, of Hampton Wick, Middlesex. The plans may be seen and copies of specification and quantities obtained on application to the Secretary, Messrs. Knapp, Drewett, & Sons, Ltd., 20, Clarence-street, Kingston-on-Thames. A deposit of two guineas for these particulars is required by the company. Sealed tenders to be delivered to the Secretary not later than April 9.

APRIL 9.—LEEDS.—URINALS.—The erection of a range of urinals in Burmantofts-street; additional entrance to urinals at Victoria Cattle Market. Particulars may be obtained at the City Engineer's office, Municipal-buildings, Leeds. Tenders delivered at the Town Clerk's office, not later than 10 a.m. on Monday, April 9.

APRIL 9.—LOCKERBIE.—ROOF.—The steel and iron work required in the renewal of roof over Dumfries dock lines at Lockerbie Station, for the Caledonian Railway Company. Drawings, etc., at the office of the Company's District Engineer, Princes-street Station, Edinburgh, on payment of two guineas. Tenders, endorsed "Tender for Steel and Iron Work required in the Renewal of the Roof over Dumfries Dock Lines, Lockerbie Station," to be lodged with Mr. J. Blackburn, Secretary, Caledonian Railway Company's Offices, 302, Buchanan-street, Glasgow, on or before April 9.

APRIL 9.—PENDLETON.—STORE-ROOMS AND PUMP-HOUSE.—Store-rooms and pumphouse at the electricity station, Frederick-road, Pendleton. Forms, etc., at the Borough Engineer's Office, Town Hall, Salford. Tenders, endorsed "Store-rooms, Electricity Station," addressed to the Chairman of the Electricity Committee, must be delivered to L. C. Evans, Town Clerk, Town Hall, Salford, by 5 p.m., Monday, April 9.

APRIL 9.—STONE.—FENCING, SHEDS, ETC.—Wood or canvas and wood-fencing; also shedding, with loose-boxes or partitions for stock and implement; also a grand stand, etc., in the showyard at Stone, on July 18 and 19 next, for the Staffordshire Agricultural Society's General Committee. Forms, etc., from the Secretary, J. P. Jones, and all tenders must be sent to the Secretary, Newcastle, Staffordshire, not later than April 9.

APRIL 10.—ISLEWORTH.—IRON STAIRCASE.—Supply and erection of an iron escape staircase to be fixed at Percy House, Mill Plot, Isleworth, for the Brentford Guardians. Plans, etc., may be seen at Union Offices, Isleworth, W.

*APRIL 10.—KENSINGTON, W.—DEMOLITION OF EXISTING HOUSES AND ERECTION OF WORKING MEN'S FLATS AT NOTTINGDALE.—For the Council of Royal Borough of Kensington. Specification and drawings of Town Clerk, Town Hall, Kensington High-street, W. Deposit of 3l. 3s. will be required (payable to Borough Treasurer at Town Hall), to be returned conditionally. Tenders sealed and endorsed "Tenders for Working Men's Flats," before 4 p.m. on April 10.

APRIL 10.—SOUTH SHIELDS.—SCHOOL.—A public elementary school, situated in Dean-road, South Shields, for the Education Authority. Forward names to Mr. J. W. Donald, A.R.I.B.A., 13, West Keppel-street, South Shields, together with a deposit of 3l. 3s. Forms of tender and bills of quantities prepared by Messrs. J. P. Allen & Partners, of Newcastle-on-Tyne. Plans can be seen at the offices of the architect. Sealed tenders, endorsed "Tender for Dean-road School," must be addressed to the Secretary, Education Office, Ocean-road, South Shields, and delivered not later than 4 p.m. on Tuesday, April 10.

APRIL 11.—EXETER.—ELECTRIC TRAMWAYS.—Contract No. 6A; for the construction of two additional bays at the car depôt, Heavitree-road; contract No. 7, for the construction of permanent way and paving (including bonding) of about five-eighths of a mile of route length line (single line), with passing places, for the Corp. Forms, etc., at the office of Mr. Thomas Moulding, City Engineer and Surveyor, Municipal Offices, Southernhay West, Exeter, on payment of a deposit of one guinea for each set. Sealed tenders, endorsed "Tramways—Contract No. 7," must be received at the office of Mr. H. Lloyd Parry, Town Clerk, No. 8 Southernhay West, Exeter, by April 11.

*APRIL 11.—FULHAM.—New wing to Almshouses, Fulham Palace-road, S.W., for the trustees of the Fulham Waste Lands and Lygon Almshouses Charity. Bill of quantities, prepared by Mr. T. Woodbridge Biggs, 10, Clifford's-inn, E.C., may be obtained on and after April 3 from Mr. Cole, Town Hall, Fulham, S.W., on payment of deposit of 5l. Bills of quantities to be returned, with the tender, to the last-mentioned before 6 p.m., April 11.

APRIL 12.—ANTRIM.—COTTAGES.—Labourers' cottages in the Rural District, for Antrim R.D.C., in accordance with plans and specifications, which can be seen at the office of the Clerk of the Council, or at the Office of the Architect, Mr. W. D. R. Taggart, Scottish Provident-buildings, Belfast, as follow: Two cottages at Townparks, Antrim, on the lands of Dr. Gawn. Two cottages at Townparks, Antrim, on the lands of Mrs. Young. One cottage at Islandbawn, Muckamore, on the Lands of John Clerk. One cottage at Ballyearl, Carnmoney, on the lands of Mr. Wm. Houston. One cottage at Ballyrobin, Muckamore, on the lands of Scott Gilliland. One cottage at Killyfad, Randalstown, on the lands of John Fulton. One cottage at Annaghmore, Toomebridge, on the lands of B. O'Boyle. One cottage at Portlee, Toomebridge, on the lands of Mrs. M'Cann. One cottage at Portlee, Toomebridge, on the lands of John O'Boyle. Two cottages at Ballynamullen, Toomebridge, on the lands of Felix Laverty. One cottage at Tamnaderry, Randalstown, on the lands of James Gilbert. Four cottages at Cranfield, Randalstown, on the lands of James Charlton. Two cottages at Cranfield, Randalstown, on the lands of Bernard O'Kane. One cottage at Cranfield, Randalstown, on the lands of Mrs. Hume. Two cottages at Ballydonaghy, Crumlin, on the lands of John M'Clurg. Two cottages at Ballyshanagill, of Crumlin, on the lands of John Nelson. Two cottages at Feehogue, Randalstown, on the lands of Lord O'Neill. Four cottages at Lurgan West, Randalstown, on the lands of Lord O'Neill. One cottage at Ballybrooby, Randalstown, on the lands of G. L. Young. Two cottages at Craigmore, Randalstown, on the lands of J. H. Mulligan. Two cottages at Ballymacilhoyle, Crumlin, on the lands of W. S. Thompson. Persons tendering may do so for any or all of the different blocks, but they must name the particular site or sites on their tender. Tenders to be lodged with Mr. J. Clerk, Clerk of Council, Union Office, Antrim, by the 12th April.

APRIL 14.—SANDAL, STAINFORTH, AND CASTLEFORD.—SCHOOLS.—For all or any of the trades in connexion with the following schools should send in names to J. Vickers-Edwards, County Architect, County Hall, Wakefield, before April 14:—New school at Sandal, near Wakefield—builder, joiner, slater, plasterer, plumber, ironfounder, and smith, painter; Stainforth (Thorne Union) Provided School, new cloak-room, etc.—builder, joiner, plumber, painter; Castleford, Wheldon-lane Provided School, alterations, repairs, etc.—builder, joiner, plumber, plasterer, slater. A deposit of 1l. is required for each of the schools.

*APRIL 18.—SANDY.—NEW COUNCIL SCHOOL AT SANDY FOR THE BEDFORDSHIRE C.C.—Drawings, specifications, and form of contract may be seen at the offices of the architects, Gotch & Saunders, Bank-chambers, Kettering, and names should be sent to them by April 7, with a deposit of one guinea. Sealed tenders, endorsed "Tender for Sandy Council School," to be sent by April 18 to Mr. W. W. Marks, Shire Hall, Bedford.

*APRIL 19.—MERTON, SURREY.—FOUR SHOPS.—Plans and specifications of H. R. G. S. Smallman, 8, Queen-street, E.C. Tenders opened at 12 noon, April 19.

*APRIL 20.—NEAR FOLKESTONE.—ENLARGEMENT TO THE HAWKINGE COUNCIL SCHOOL, NEAR FOLKESTONE, FOR THE KENT EDUCATION COMMITTEE.—Drawings and

specifications may be seen at the office of the Architect, Mr. Andrew Bromley, Radnor-chambers, Folkestone, to whom the names of those wishing to tender, together with 1*l.* deposit, should be sent by April 5. Tenders, on form supplied, to be sent to Mr. W. Thomas, 66, Broadmead-road, Folkestone, by noon, April 20.

APRIL 20.—SOUTHOWRAM, HALIFAX.—LIGHT RAILWAY.—For a single line railway, about four miles and a quarter in length, from Holmfield Station to Southowram, in the borough of Halifax, in the West Riding of the County of York, together with certain station works connected therewith, for the Holmfield and Southowram Light Railway. Specification, etc., from Messrs. Land & Foster, Solicitors, 13, Ward's End, Halifax, and tenders must be sent into them not later than April 20.

*APRIL 20.—TONBRIDGE.—NEW COUNCIL SCHOOL AT TONBRIDGE, KENT, FOR THE KENT EDUCATION COMMITTEE.—Drawings and specifications may be seen at the office of the architect, Mr. C. H. Strange, 20, Dudley-road, Tunbridge Wells. Names to be sent to above, with 1*l.* deposit, by noon, April 5. Tenders, on form supplied, to be delivered to Mr. N. R. Stone, 23, Church-road, Tunbridge Wells, by noon, April 20.

APRIL 21.—MOLD.—ALTERATIONS TO SCHOOLS.—Alterations and extensions to the County School, Mold, Flintshire, North Wales, for the Governors. Plans and specifications may be seen at the offices of the architect, Mr. Sam Evans, N. and S.W. Bank-buildings, High-street, Mold, from whom bills of quantities may be obtained on payment of a sum of 2*l.* 2*s.* Tenders to be sent in to W. R. Howard Evans, Solicitor, Mold, Clerk to the Governors, not later than April 21.

*APRIL 23.—COVENTRY.—NURSES' HOME.—For the Coventry and Warwickshire Hospital. Plans, specifications, etc., of Herbert W. Chattaway, Trinity-churchyard, Coventry, and forms of tender can be obtained upon depositing 3*l.* 3*s.* Tenders, sealed and endorsed "Nurses' Home," to be sent to Ellis E. Crisp, Coventry and Warwickshire Hospital, Stoney Stanton-road, Coventry, not later than 10 a.m., April 23.

APRIL 23.—LITTLEHAMPTON.—BRIDGE. ETC.—A steel bridge over the River Arun, to consist of a swing span and a fixed span, also for approaches and abutments. Tenders must be sealed and endorsed either "Tender for Bridge," or "Tender for Approaches," and must be delivered to Mr. Arthur Shelley, Clerk, Town Offices, Littlehampton, not later than 9 a.m. on Monday, April 23. For the bridge only those tenders from firms who have erected similar bridges will be considered, on a deposit of 5*l.* 5*s.* Forms of tender, etc., may be obtained on application to the Engineer, Major Hector Tulloch, C.B., R.E. (Retd.), 28, Victoria-street, Westminster, London, S.W.

*APRIL 24.—BOSTON.—NEW POST OFFICE AT BOSTON. For the Commissioners of H.M. Works and Public Buildings. Drawings, specification, conditions, and form of contract may be seen on application to the Postmaster between 11 and 4. Bills of quantities and forms of tender at undermentioned address on payment of one guinea, which will be returned conditionally. Tenders before noon April 24, addressed Secretary, H.M. Office of Works, Storey's Gate, S.W.

*APRIL 24.—WALTHAMSTOW.—Tenders desired for proposed Edinburgh-road Council School. Names to the architect, Mr. H. Prosser, Education Committee Offices, High-street, Walthamstow. A 5*l.* note must be sent with application as deposit for bills of quantities to be returned to those sending bona-fide tenders. Names not later than mid-day April 5, after which date drawings and specifications can be seen between the hours of 10 a.m. and 4 p.m. (Saturdays 10 to 12). Tenders, endorsed "Edinburgh-road School," not later than 4 p.m. April 24, addressed to Mr. T. W. Liddiard, Secretary to Committee, High-street, Walthamstow.

MAY 5.—ST. PETER-PORT, GUERNSEY.—NEW QUAY.—A new quay wall, with low-level landing on the southern side of St. Julian's Emplacement, Harbour of St. Peter-Port, Guernsey, for Harbour Commission. Forms of tender, etc., from J. H. Duquemin, States Engineer, States Offices, Guernsey, on payment of a sum of 5*l.*. The tenders, enclosed in sealed envelopes, endorsed "Tender for Quay, St. Julian's," and addressed to John N. Brouard, Esq., Supervisor of the Harbour, etc., to reach the States Office, Guernsey, on or before Saturday, May 5, at 3 o'clock p.m.

——. BARNARD CASTLE.—SHOPS AND BUSINESS PREMISES.—Shops and business premises at Barnard Castle, for the Co-operative Society. Send names to T. Farrow, Architect, 7, Market-place, Barnard Castle.

*——. ROMFORD.—Enlargement of Mawneys-road Schools, for the Essex C.C. Education Committee. Names to the architects, Messrs. Harrington & Ley, 65, Bishopsgate-street Without, E.C., with deposit of 2*l.* 2*s.*, on or before April 11.

*——. POOLE (Dorset).—CORN STORE (Principally Steel Construction and Galvanised Iron).—Drawings, specification, and conditions of contract may be seen, and bills of quantities obtained, on payment of one guinea, to be returned conditionally. Tenders to Fred Bath, architect, Crown-chambers, Salisbury.

IRON AND STEEL.

APRIL 4.—GREAT YARMOUTH.—WATER SOFTENING PLANT, ETC.—Contract No. 1, a water softening plant; contract No. 2, gas-engine and pumps. Specifications and all particulars may be obtained on application to Mr. W. J. Carpenter, A.M.I.C.E., South Denes-road, Great Yarmouth, on deposit of a cheque for 1*l.* 1*s.*, returnable on receipt of a bona-fide tender. Tenders, endorsed, to be addressed to "The Clerk, Great Yarmouth Board of Guardians," Queen-street, Great Yarmouth, and must be received by April 4.

APRIL 4.—SUNDERLAND.—PIPES.—Steam Exhaust and other pipes in connexion with the extension of Hylton-road Electricity Station. Specification and form on application to the Borough Electrical Engineer, Mr. John F. C. Snell, M.Inst.C.E., Town Hall, Sunderland, and on payment of a deposit of 1*l.* 1*s.*, which will be returned on receipt of a bona-fide tender. Sealed tenders, addressed to the "Chairman of the Electricity and Lighting Committee," Town Hall, Sunderland, by 12 o'clock noon, on the 4th day of April, endorsed "Steam and other Pipes," to Fras. M. Bowey, Town Clerk, Town Hall, Sunderland.

APRIL 7.—WISHAW.—GAS PIPES, ETC.—For 370 tons, or thereby, of 12-in. cast-iron gas pipes, with the necessary special drip boxes and valves. The Town Council are also prepared to receive tenders for the cutting and filling of the track for the laying of the above pipes. Plans of the proposed pipe track can be seen, and forms of tender can be obtained, on application to Mr. P. B. Watson, Gas Engineer, Wishaw. Tenders to be with Mr. Logan, Town Clerk, Wishaw, not later than April 7.

APRIL 16.—BELFAST.—PLANT, ETC.—Coal and ash-conveying plant, bunkers and chain grate mechanical stokers, for the Tramways and Electricity Committee of the Belfast Corp. Specification, with form of contract, may be obtained from Mr. Victor A. H. M'Cowen City Electrical Engineer, Belfast, on payment of two guineas, which will be refunded provided a bona-fide tender has been sent and not withdrawn. Sealed tenders, endorsed "Conveying Plant," shall be lodged with Sir Samuel Black, Town Hall, Belfast, not later than eleven a.m. on Monday, April 16.

LIGHTING, HEATING, Etc.

APRIL 6—GREENOCK.—ELECTRIC LIGHTING, ETC.—The Hospital Board invite Tenders for (1) electric lighting, (2) electric lift, (3) telephones and electric bells for new Combination Hospital, presently in course of erection at Gateside, Inverkip-road, Greenock, according to plans and specifications by John Dixon, A.M.Inst.M.E., Consulting Engineer. Schedule of quantities and form of tender from Colin MacCullock, Clerk to the Board, Municipal-buildings, Greenock, on payment of a deposit of one guinea for each schedule, which amount will be returned on receipt of a bona-fide tender. Sealed tenders to be at Town Clerk's office, Greenock, by 11 a.m., April 6.

MISCELLANEOUS.

APRIL 3.—BANBURY.—REPAIRS TO CEMETERY.—The Town Council invite tenders for sundry repairs at the cemetery. Specification of work can be seen at office of N. H. Dawson, C.E., Borough Surveyor, on and after Saturday, March 24. Sealed tenders, endorsed "Cemetery Repairs," to be delivered not later than noon, April 3.

APRIL 4.—EDINBURGH.—PANEL.—Tenders, from bronze founders only, for providing and fixing a memorial panel on the north frontage of the City Chambers Building. Specifications on receipt of crossed cheque for 1*l.* 1*s.*, which will be returned to all who send in bona-fide tenders. Tenders to R. Morham, City Architect, Public Works Office, Edinburgh, by April 4, sealed and marked "Tender for Bronze Panel, City Chambers."

APRIL 5.—EDINBURGH.—FENCING, ETC.—Estimates are wanted for (1) wrought-iron unclimbable fencing, (2) rustic staircase, (3) public gymnasia at Redbraes and Roseburn Public Parks. Estimates must be sent to Mr. R. Morham, City Architect, Public Works Office, City-chambers, on April 5, sealed and marked "Tender for 1, 2, or 3," as above, as the case may be.

APRIL 7.—DEWSBURY.—DISINFECTANTS.—The supply, in such quantities as may be required during the ensuing twelve months, of ten tons of disinfecting powder, and a quantity of disinfecting fluid, for the Corp. Tenders must specify the base and nature of the disinfectant, the price per ton of the powder, and the price per gallon for 40-gallon cask, and price per gross of 8-oz. bottles for fluid. Tenders, under sealed cover, endorsed "Disinfectants," to be in by April 7. Mr. H. Ellis, Town Clerk, Town Hall, Dewsbury.

APRIL 10.—WIMBLEDON.—FIRE HYDRANTS.—Fire hydrants for a period of two years, the minimum quantity required being fifty, for the Corporation. Conditions, etc., from C. H. Cooper, Borough Engineer, Town Hall, The Broadway, Wimbledon. Tenders, endorsed "Tender for Fire Hydrants," addressed to Chairman of Watch Committee, not later than April 10.

APRIL 11.—WIMBLEDON.—WATER VANS.—Two water vans for the Corporation. Specifications from C. H. Cooper, Borough Engineer, Town Hall, Wimbledon. Tenders, endorsed "Tender for Water Vans," addressed to Chairman of Highways Committee, by April 11.

*APRIL 21.—BARMING HEATH (KENT).—FURNITURE AND EQUIPMENT FOR THE TWO NEW PATIENTS' BLOCKS AT THE KENT COUNTY LUNATIC ASYLUM, BARMING HEATH, NEAR MAIDSTONE.—Drawings, specifications, and schedule may be seen and obtained at the office of W. J. Jennings, architect, 4, St. Margaret-street, Canterbury, on depositing 5*l.*, which will be returned on receipt of a bona-fide tender. Tenders to be delivered by 10 a.m., April 21, to Francis R. Howlett, clerk to the Kent County Asylums Committee, 9, King-street, Maidstone.

MORRISTON.—PIT SINKING.—Sinking the Copper Pit, Morriston, near Swansea, from the 6 ft. vein down to the 2 ft. vein, a depth of about 60 yds., 12 ft. diameter in the clear. Forms, etc., from Mr. D. W. A. Saunders, Civil and Mining Engineer, Worcester-chambers, Swansea.

PAINTING.

APRIL 9.—HALIFAX.—PAINTING.—Outside painting of Council schools, for Halifax Education Committee. Specifications and forms of tender may be obtained on application to Mr. James Lord, C.E., Borough Engineer, Town Hall, Halifax. Tenders, endorsed "Painting Council Schools," must be sent to Mr. W. H. Ostler, Secretary, on or before April 9.

*APRIL 12.—LONDON, S.E.—Cleaning and painting work at Newington Workhouse, Westmoreland-road, Walworth, for Guardians of Southwark Union. Specification can be seen at the offices of Master of Workhouse, as above. Tenders, endorsed "Cleaning and Painting Work," to Clerk, Union Offices, John-street West, Blackfriars-road, S.E., by 4 p.m., April 12.

APRIL 15.—DUBLIN.—PAINTING.—Painting, decorating and repairs to Gurteen Church and Presbytery, for the Very Rev. J. O'Connor, P.P. Specification at office of Messrs. William H. Byrne & Son, Architects, 20, Suffolk-street, Dublin. Tenders by April 15.

ROADS, SANITARY, AND WATER WORKS.

APRIL 2.—BRADFORD.—TAR PAVING.—Tar paving a number of school playgrounds for Bradford Education Committee. Forms of tender, etc., from the Architect's Department, Manor-row. Tenders, endorsed "Tenders for Tar Paving," to Tho. Garbutt, Secretary, Education Office, Manor-row, Bradford, by April 2.

APRIL 3.—BROSELEY.—SEWER.—A new 9-in. and 6-in. sewer at Broseley, Salop. Plans, etc. may be seen by appointment at the office of the Borough Surveyor, Municipal Offices, Iron Bridge. Sealed tenders, endorsed "Broseley Sewer," must reach F. H. Potts, Town Clerk's Office, Much Wenlock, Salop, by April 3.

APRIL 4.—LEITH.—PAVING.—Paving, with cement concrete, of part of Jameson-place, for Leith Town Council. Plans and specifications of works may be seen, and information obtained, at the Burgh Surveyor's office, Charlotte-street. Tenders, marked "Paving," to be lodged with Mr. T. B. Laing, Town Clerk, Town Clerk's Office, Leith, by April 4.

APRIL 5.—LEEDS.—PAVING, ETC.—Paving and flagging of the following streets:—Hamilton-terrace, Back Hillcrest-avenue, Hillcrest-place, Tempest-road, Maud-place, Back Burlington-road, Colenso-mount, Back Colenso-mount, Cleveleys-mount, Cleveleys-street, Cleveleys-terrace, and Cleveleys-avenue, for Leeds Highways Department. Plans and specifications may be seen at the City Engineer's office, Municipal-buildings. Tenders, on forms supplied, must be sent to the Town Clerk's office, Town Hall, on or before April 5, addressed to the Highways Committee, and endorsed "Tender for Private Street Works."

APRIL 6.—HITCHAM.—WATER SUPPLY.—Digging the trench and laying about 1,950 yds. of cast-iron water main, 3 in. diameter, with valves and hydrants; also for the construction of a small concrete reservoir, at Hitcham, for Cosford R.D.C. The pipes, valves, and hydrants will be provided by the Council, but the carting from Stowmarket station will be included in the contract. Plans can be seen and copies of specification obtained on deposit of one guinea at the office of Mr. Alfred Newman, Clerk, Hadleigh, Suffolk, to whom tenders are to be sent by 10 a.m. on April 6, or on application to Mr. Henry Miller, Engineer, 16, Museum-street, Ipswich.

APRIL 6.—LYMINGE, STANFORD, ETC.—WATER MAINS—Laying and jointing of water mains in the parishes of Lyminge, Stanford, and Saltwood, for the Elham Valley Water Company, Ltd. Forms of tender, etc., may be obtained on application to the Manager at the offices of the Company at Lyminge, Kent. Tenders, endorsed "Tender for Laying Mains," to be sent to Mr. H. H. Elliott, Secretary, 7, Victoria-street, Westminster, S.W., on or before Friday, April 6.

APRIL 7.—CONGLETON.—SEWER.—Main sewer, 9 in. diam., 390 yds. in length. Labour, etc., in laying 2,400 yds. of water-main. Forms, etc., from Mr. Randle Burslam, borough surveyor. Tenders to be delivered at the office of the Town Clerk, endorsed "Tender for Sewer or Water-main," addressed to Edw. A. Plant, Esq., Town Clerk, by April 7.

APRIL 9.—BADBY AND FLORE.—WATER SUPPLY AND SEWERAGE.—The R.D.C. of Daventry invite tenders for Badby water supply. To lay cast-iron mains, construct reservoir and collecting well, and to erect a wind motor; and Flore sewerage, to construct small outfall works. Forms of tenders, etc., from the Engineer to the Council, Mr. J. B. Williams, Moot Hall, Daventry, upon the payment of 2*l.* 2*s.* for each. Sealed tenders, endorsed "Badby Water Supply" or "Flore Sewerage," must be delivered to J. D. Spearing, Clerk of the Council, The Moot Hall, Daventry, not later than April 9.

APRIL 9.—SANDAL MAGNA.—STREET WORKS.—Works in Grosvenor-street, Lord-street, Back Montague-street, Montague-street, Back Bowman-street, Bowman-street, Back Gordon-street, and Gordon-street, being streets of the Agbrigg-road within the Sandal Magna U.D.C.'s area. Forms, etc., at the office of Mr. Frank Massie, M.Inst.C.E., Tetley House, Kirkgate, Wakefield. Tenders, endorsed "Tender for Private Streets," to be delivered to A. E. Greaves, Clerk to the said Council, Wood-street, Wakefield, not later than April 9.

APRIL 9.—SEVENOAKS.—ROAD WORK.—Levelling, metalling, kerbing, tar-paving, footpaths, channelling, and making good of the The Drive, Sevenoaks, for the U.D.C. Forms of tender, etc., obtained at the office of Mr. S. Towlson, A.M.I.C.E., Surveyor to the Council, upon payment of a cash deposit of 5*l.* Tenders, endorsed "Tender for Street Works," to Herbert J. Thompson, Clerk to the Council, Urban Council Offices, Argyle-road, Sevenoaks, by April 9.

APRIL 10.—BADENOCH.—UPKEEP OF ROADS AND BRIDGES.—For a period of three years from Whitsunday next: (1) Abernethy No. 1, extent 26¼ miles (or thereby); (2) Abernethy No. 2, extent 21¼ miles (or thereby); (3) Dalwhinnie, extent 29 miles (or thereby); (4) Laggan, extent 35¼ miles (or thereby), for Badenoch District Committee. Specification and schedule of quantities required annually may be had from Mr. John Mackenzie, District Road Surveyor, County-buildings, Kingussie. Offers to be lodged with John Grant, Esq., District Clerk, Grantown-on-Spey, on or before Tuesday, April 10. The lowest or any offer may not be accepted.

APRIL 10.—LOUGHBOROUGH.—SHEPSHED WATER SUPPLY.—About 1,300 yds. of 6-in., 2,300 yds. of 4-in., and 3,500 yds. of 3-in. cast-iron mains, valves, and other fittings; together with building valve and other chambers, for supply of water to Shepshed, for the Water Committee of the Loughborough Corp. Forms, etc., from the Engineer, Mr. A. H. Walker, Assoc.M.Inst.C.E., Town Hall, Loughborough. Sealed tenders, addressed to the Chairman of the Water Committee, Town Hall, Loughborough, are to be delivered not later than 5 p.m. on Tuesday, April 10, endorsed "Tender for Shepshed Mains."

APRIL 10.—WALTON-ON-THAMES.—SEWERAGE WORKS.—Construction of 270 yds. of 8-in. cast iron pipe sewer, together with manholes and house connexions, in Russell-road, Walton-on-Thames, for the U.D.C. Specifications, etc., at the Council offices, Walton-on-Thames, on payment of 1*l.* 1*s.* Sealed tenders, endorsed "Russell-road Sewerage," to be delivered to Mr. R. Wilds, Engineer and Surveyor, Council offices, Walton-on-Thames, by April 10.

APRIL 11.—PORTBALLINTRAE AND BUSHFOOT.—WATERWORKS.—For Portballintrae and Bushfoot Waterworks, for Ballymoney R.D.C. Plans, quantities, etc., may be seen at the office of Mr. M'Cormick, Engineer, Diamond, Coleraine, from whom form of tender may be obtained on payment of 2*l.* 2*s.* Proposals, endorsed "Tender for Portballintrae Waterworks," to be in the hands of the Clerk of the R.D.C. by April 11.

APRIL 14.—DONAGHADEE.—WATER AND SEWERAGE SCHEME.—The U.D.C. invite tenders to take levels, prepare plans, specifications, and estimates for a proper water and sewerage scheme for the town of Donaghadee. Applicants to state whether they have ever carried out similar work; if so, to give particulars, and enclose copy of any testimonials they may have. Tenders, sealed and endorsed "Engineer," will be received by D. Walker, Clerk to the Council, till April 14.

APRIL 14.—LEITH.—CAUSEWAYING.—Laying causeway required on the Quays of the Harbour and Docks, for the Commissioners for the Harbour and Docks of Leith. Particulars on application at the office of the Superintendent, Tower-place, Leith. Tenders to be lodged with Victor A. Noel Paton, W.S., Clerk to the Commissioners, by April 14.

APRIL 14.—PORTSMOUTH.—SEWERS.—For the construction of sewers, manholes, etc., and all accessories in Tangier-road and through Buffin's Estate into Milton-road, and thence to Bransbury-road, at Eastney, in the said Borough. On payment of the sum of 5l., a lithographed copy of the specification, general conditions, and bill of quantities, with form of tender, can be obtained on application to Alexander Hellard, Town Clerk, Town Hall, Portsmouth, and any further particulars can be obtained at the Borough Engineer's offices, at the Town Hall, Portsmouth. Tenders, marked "Tender for Tangier-road Sewer," must be sent to the Town Clerk not later than 10 a.m. on Saturday, April 14.

APRIL 18.—BOURNEMOUTH.—ROADS.—For making-up Firs Glen-road, Winton, A.A. (about 460 ft. long); Firs Glen-road, Winton, B.B. (about 370 ft. long); road rear of Parade, Boscombe (about 250 ft. long). For the Corporation. Forms, etc., from Borough Engineer, F. W. Lacey, Municipal Offices, Bournemouth. Deposit of 1l. 1s. required. Tenders to Town Clerk, G. W. Bailey, by April 18.

APRIL 18.—ST. BREWARD.—LAYING, ETC., PIPES.—Trenching and laying of 9-in. diameter cast-iron and stoneware pipes from Stannon to near Wenford Bridge, in the parish of St. Breward, a distance of over five miles, and other works, for the Directors of the North Cornwall China Clay Co., Ltd. Plans and specification may be seen at the office of Mr. T. H. Andrew, engineer, Market-hill, St. Austell, until Wednesday, April 11, and tenders will be received by him not later than April 18.

APRIL 19.—CHARLESTOWN.—SEWERAGE.—St. Austell R.D.C. invite tenders for the following works in connexion with the sewerage and sewage disposal of the districts of Charlestown, Tregonissey, and Slades: 2,317 yds. run of 6-in. stoneware pipe sewers, 4,522 yds. run of 9-in. stoneware pipe sewers, 120 yds. run of 12-in. stoneware pipe sewers, 150 yds. run of 9-in. cast-iron pipe sewers, together with manholes and other works, the construction of storage culvert, with cast-iron pipe outlet to low water. The whole to be let in one contract. Drawings and specification may be seen at the offices of the Engineers, Messrs. Beesley, Son, & Nichols, MM.I.C.E., of 11, Victoria-street, Westminster, S.W., where forms, etc., can be obtained on deposit of 5l. Tenders, addressed to Mr. John Stephens, Clerk to the St. Austell R.D.C., St. Austell, and endorsed "Sewerage and Sewage Disposal," are to be delivered at his offices, at St. Austell, before 10 a.m., April 19.

APRIL 19.—YSTRADYFODWG.—TUNNEL.—Driving a tunnel (mining only) 2,100 yds. or thereabouts in length, through the Blaenrhondda Mountain, sinking shafts, and constructing works in connexion therewith, in the parish of Ystradyfodwg, in the county of Glamorgan, for the Rhondda U.D.C. Forms of tender, etc., upon application to Mr. J. E. Hughes, M.Inst.C.E., Engineer, at his office, Tynewydd, Treherbert, Glamorgan, upon depositing the sum of 5l. An assistant-engineer will accompany intending contractors along the site of the works on Wednesdays, April 4 and 11, starting from the Engineer's office at Tynewydd at 11 o'clock a.m. Sealed tenders, addressed to the Chairman of the Gas and Water Committee, endorsed "Tender for Tunnel," must be delivered at the Council offices, Pentre, Glam., not later than 10 a.m. on Thursday, April 19.

STONE, MATERIALS, AND STORES.

APRIL 3.—CAERPHILLY.—LIMESTONE.—Limestone for the various portions of district of the U.D.C. for the year ending March 31, 1907. Specification can be seen and forms of tender obtained at the Council Offices, Caerphilly. Sealed tenders, endorsed "Tender for Limestone," to be addressed to the Chairman of the Council, and delivered not later than Tuesday morning, April 3.

APRIL 3.—HAMMERSMITH.—PAVING.—Certain paving work to be carried out at the workhouse and infirmary at Ducane-road, Wormwood Scrubs, W., for the Guardians. Specification from Mr. J. Lamb, Clerk to the Guardians, Guardians' Offices, 206, Goldhawk-road, Shepherd's Bush, W.; and tenders, endorsed "Tender for Paving," not later than 4 o'clock in the afternoon of April 3.

APRIL 3.—HENLEY.—GRANITE.—Hartshill, Clechill, Rowley Regis, or Leicestershire granite, broken to a 2-in. gauge, for Henley R.D.C. The quantities required, and which must be completely delivered at the various railway stations by September 30, 1906, are as follows:—Henley-on-Thames, 500 tons; Reading, 520 tons; Shiplake, 100 tons; Watlington, 300 tons. Tenders and samples should reach J. MacPherson, Surveyor, St. Mark's-road, Henley-on-Thames, not later than April 3.

APRIL 3.—LINTON.—TOOLS.—The Council are prepared to receive tenders for undermentioned tools for the year ending March 31, 1907:—(1) Road bass brooms, (2) road picks, (3) road rakes, (4) road shovels, (5) road spades, (6) road lines, (7) road scrapers, (8) road hooks, (9) road gullies and gratings, (10) road barrows, for Linton R.D.C. Samples to be sent in if required for Nos. 1, 2, 3, 4, 5, 6, 7, 8, and 10. Tenders to be delivered not later than noon, April 3, addressed to A. M. Cook, Engineer and Surveyor, Offices, Linton, Cambridgeshire.

APRIL 3.—LONDON.—SPRINGS, WHEELS, ETC.—For (1) springs, spiral, etc., (2) springs, laminated, (3) wheels and axles for railway wagons, (4) w.i. buffers for wagons, or the Secretary of State for India in Council. Conditions of contract from the Director-General of Stores, India Office, Whitehall, S.W., and tenders are to be delivered at that office by 2 o'clock p.m. on Tuesday, April 3.

APRIL 3.—PORTSLADE.—FLINTS.—Portslade-by-Sea U.D.C. invite tenders for 350 yds. of clean hill flints and 500 yds. of screened dug flints. Forms of tenders from the Surveyor, St. Andrew's-road, Portslade-by-Sea. Tenders, endorsed "Tenders for Flints," to be addressed to T. Austen, Clerk, Council Office, Portslade-by-Sea, not later than 12 o'clock noon on Tuesday, April 3.

APRIL 3.—SHEPPEY.—STONE.—Blue rag stone and pit flints (quantities likely to be required being 1,070 yds. of blue rag stone and 210 yds. of pit flints), for the R.D.C. The materials to be free from hassock and dirt and samples to be delivered with tenders. The materials to be delivered free alongside in barges at the following wharves and delivery places, viz.:—Harty Ferry and the several sidings on the Sheppy Light Railway in proportions as specified in forms of tender. Forms of tender can be obtained from John Copland, Clerk, Sheerness, and sealed tenders, marked "Tender for Road Materials," must be sent by April 3.

APRIL 3.—SUTTON.—MATERIALS.—Supply of the following materials during the year ending March 31, 1907:—(1) Broken granite and basalt; (2) gravel flints and ballast; (3) hand-picked surface flints; (4) granite setts and cubes; (5) hardwood paving blocks; (6) granite kerbing and channelling; (7) stoneware and sanitary pipes; (8) Portland cement; (9) manganate of soda; (10) sulphuric acid; (11) disinfectants; (12) tar-paving material; (13) ironmongery, tools, oils, paints, soaps, etc.; (14) manhole covers, gully grates, etc., etc.; (15) street lamp columns; (16) horse hire; (17) horse forage; (18) coal and coke; (19) smith's work; (20) purchase of street sweepings from the several districts of the town, for Sutton (Surrey) U.D.C. Conditions and forms may be obtained on payment of 2s. 6d. (which will not be returned) on application to C. Chambers-Smith, Engineer and Surveyor to the Council, Municipal Offices, Sutton, Surrey. Sealed tenders, endorsed "Tender for Materials," will be received up to 3 o'clock p.m. on April 3.

APRIL 4.—BROMSGROVE.—GRANITE.—600 tons of 2½-in. broken granite, delivered free at Bromsgrove Station. Tenders and small samples to be sent to Francis J. Russon, Clerk, New-road, Bromsgrove, not later than April 4 next.

APRIL 6.—SMETHWICK.—STORES.—Materials and articles for the year ending March 31, 1907:—Broken Clee Hill granite; broken and unbroken Rowley ragstone, kerbs, circles, elbows, and setts; steel shovels and steel picks, scrapers, mud scoops, digging forks, and galvanised sanitary ashbins—all Smethwick pattern; bricks (Staffordshire brindled and common); scavenging and dandy brushes and pickhelves; gully grates, frames and weirs; manhole and lamphole covers and cast-iron trunks—all Smethwick pattern; glazed earthenware pipes; cement (best heavy Portland); lime; carbolic disinfectant powder. All the above to be delivered at the contractor's cost to the Highway Stores, Stony-lane, except the following: ragstone—separate prices to be given for delivering to Spon-lane Wharf and Rolfe-street Depôt Wharf. Forms from Mr. C. J. Fox Allin, Borough Surveyor, Town Hall, Smethwick. Tenders, addressed to the Chairman of the Public Works Committee, to be sent not later than 10 a.m. on April 6, endorsed "Tender for Stores."

APRIL 6.—STAFFORDSHIRE.—ROAD MATERIALS, ETC.—Supply and cartage of road materials, tools, and road implements for Leek, Newcastle, Uttoxeter, Stafford, Lichfield, Sedgley, to March 31, 1907, for the Staffordshire County Council. Specifications and forms from Mr. James Moncur, Chief Surveyor of Main Roads, County-buildings, Stafford, on or after Saturday, March 24, and the applicants are requested to state which form of tender they require, and also the name of the district. Sealed tenders, endorsed "Tenders for Roads," should be delivered at the offices of the Clerk of the Council, County-buildings, Stafford, on or before April 6.

APRIL 7.—BEDFORD.—TIP WAGGONS, ETC.—Supplying and delivering free on rail at Bedford station two tip waggons for the removal of house refuse, two street watering vans, and three general purpose carts, for Streets and Buildings Committee of the Corp. Full particulars can be obtained upon application to the Borough Surveyor, Town Hall, Bedford. Sealed tenders, endorsed "Tender for New Vans, etc.," and addressed to the Chairman of the Streets and Buildings Committee, to be delivered not later than 12 noon on April 7.

APRIL 7.—BLYTHING.—GRANITE.—2,000 tons of granite, consisting of 800 tons of 2½-in. granite, 1,000 tons of 1¾-in. granite, and 200 tons of granite chips, to be delivered on or before July 31, at the following places, in such quantities as may be required by the surveyor, viz.:—Saxmundham, Darsham, Halesworth, Beccles, Leiston, Brampton, Wenhaston, Blythburgh, Walberswick, Southwold, and Laxfield Stations, Beccles Quay, and Lowestoft South Quay, for the R.D.C. Tenders to Mr. Harold A. Mullens, Clerk, Union Offices, Bulcamp, Halesworth, not later than April 7. No printed form of tender is issued.

APRIL 7—BRUMBY.—WHINSTONE.—400 tons of Whinstone, delivered free at Frodingham and Gunness Stations, Great Central Railway, for Brumby and Frodingham U.D.C. Specification and forms of tender may be had on application to Joe Green, Surveyor, Council Offices, New Frodingham, Doncaster, to whom tenders must be sent not later than Saturday, April 7.

APRIL 7.—WROTHAM.—ROAD MATERIAL.—For flints, ragstone, ironstone, and gravel, also for cartage, for Wrotham U.D.C. Conditions of contract may be inspected and forms of tender obtained upon application to Mr. A. J. Powell, the Surveyor of the Council, at his office, Borough Green, Sevenoaks. Tenders to be sent to the Clerk of the Council, sealed, and endorsed outside "Tender for Road Material 'or Cartage,'" not later than Saturday, April 7. Samples of the different stone must be sent to the Surveyor's Office.

APRIL 9.—EDINBURGH.—STORES.—The Edinburgh and Leith Corporations' Gas Commissioners invite tenders for the supplying of oils and paints, timber, meters, gas fitters' stores, wrought-iron tubes and fittings, cast-iron pipes and connexions, yarn, etc., iron, steel, and implements, iron castings, etc., causeway repairs, gas cooking stoves, for their various undertakings during the year from Whitsunday first. Tender forms can be had on application to the Chief Engineer and Manager at the Gas-works, New-street. Offers must be lodged on April 9 to Mr. James McG. Jack, Clerk, 25, Waterloo-place, Edinburgh, marked "Tender for Oils and Paint," or as the case may be.

APRIL 9.—MANCHESTER.—MATERIALS.—The Tramways Committee of the Manchester Corporation are prepared to receive tenders for the supply of the following:—(*a*) Steel girder tram rails, (*b*) steel tie bars, (*c*) granite sets, (*d*) pitch for paving purposes. Specifications and forms may be obtained on application to Mr. J. M. McElroy, General Manager, Tramways Department, 55, Piccadilly, Manchester, on deposit of 2l. 2s., which will be returned on receipt of bona-fide tender. Tenders are to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester, and must be received not later than 5 p.m. on Monday, April 9.

APRIL 10.—WEST ASHFORD.—ROAD MATERIALS.—Gravel, surface picked flint, and Kentish rag stone, for the Parishes of Bethersden, Great Chart, Little Chart, Charing, Egerton, Hothfield, Kingsnorth, Pluckley, Smarden, Shadoxhurst, and Westwell, and for the haulage of granite from Headcorn, Pluckley, Hothfield, Charing, and Ashford Railway Stations; also from Great Chart Siding, for West Ashford R.D.C. Forms, etc., from Mr. Alfred Sims, Surveyor, Surveyor's Office, Charing. Sealed tenders, endorsed "Highway Materials and Haulage," addressed to the Chairman of the R.D.C., are to be delivered at the Union House, Westwell, Ashford, by April 10.

APRIL 11.—HORSHAM.—GRANITE, ETC.—Granite or other approved stone and flints (total, about 7,000 cubic yds.), delivered to the various railway stations in district of the Horsham R.D.C. Also for cartage of materials from railway stations to the roadsides. Forms of tender and further information to be obtained of the Surveyor, Mr. Wm. Dengate, 58, Park-street, Horsham, to whom prepaid samples must be sent. Tenders, marked "Highways Tender," to reach A. C. Coole, Clerk to the Council, 9, Carfax, Horsham, on or before April 11.

APRIL 11.—YEARDSLEY-CUM-WHALEY.—GRANITE.—400 tons of 2-in. and 20 tons of 1-in. granite delivered free at Whaley Bridge Station (L. & N.W. Railway) at such times and in such quantities as the Council may require during the ensuing year, for the U.D.C. Tenders, marked "Tender for Granite," to Mr. S. Taylor, solicitor, Buxton, and samples to be forwarded to the Council Room, Whaley Bridge. Tenders by April 11.

APRIL 12.—DEVONPORT.—STORES.—Devonport Corporation Electricity Department invite tenders for the supply of general stores for a period of twelve months. Forms, etc., may be obtained at the Office of the Borough Electrical Engineer, Newport-street, East Stonehouse. Tenders to be sent in, sealed, and endorsed "Tender for Electricity Stores," to R. J. Fittall, Esq., Town Clerk, Devonport, on or before noon, April 12.

APRIL 14.—LEITH.—TIMBER, ETC.—Timber, iron, and stores required by the Commissioners for the harbour and docks, Leith, from May 1, 1906, to May 1, 1907. Particulars on application at the office of the Superintendent, Tower-place, Leith. Tenders to be lodged with Mr. Victor A. Noel Paton, W.S., Clerk to the Commission, 31, Melville-street, Edinburgh, by April 14.

APRIL 14.—SOUTHBOROUGH.—STONE.—900 yds. of hard Sevenoaks, or other stone, broken to pass 1½-in. ring, to be delivered into the various depots of Southborough U.D.C., at Southborough, in accordance with the Surveyor's instructions. Also for about 450 tons, more or less, of Cherbourg, Quartzite, Rhenish Basalt, or Norway Granite, machine broken to 1½ to 2-in. gauge, to be delivered to Tonbridge Station of the South-Eastern and Chatham Railway. Tenders, with samples, by 14th day of April, endorsed "Tender for Stone," and addressed to Philip Hanmer, Clerk to the Council, Council Offices, Southborough.

APRIL 17.—SEVENOAKS.—MATERIALS.—Quartzite, basalt or penlee, rag stone, chert, flints, etc., at the stations or on to the various roads within the district, cartage from stations and depots, and steam rolling for the whole of the district, for the year ending March 31, 1907, for Sevenoaks R.D.C. Forms, etc., from Mr. R. Bailey, Sundridge, Sevenoaks, and Mr. W. H. Bolt, Leigh, Kent, Surveyors to the Council, or Mr. George F. Carnell, Clerk of the Council. Samples of material, to be delivered, carriage paid, at the Union Workhouse, Sundridge, Sevenoaks, and sealed tenders, marked "Tenders" on outside of envelope, to be returned, with the conditions intact, to Clerk, by April 17.

APRIL 18.—BRADFORD.—ROAD METAL.—For 20,000 tons of road metal. Form on application at the office of Mr. J. H. Cox, City Surveyor, at the Town Hall. Sealed tenders, endorsed "Tender for Road Metal," to be sent to Frederick Stevens, Town Clerk, Town Hall, Bradford, on or before Wednesday, April 18.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*CLERK OF WORKS.....	South Shields Corporation ..	3l. per week	April 7

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C.	Churchill & Sim	April 4
*BUILDING MATERIALS, BUSBRIDGE HALL, GODALMING—On the Premises	N. & W. Debenham	April 5
*FREEHOLD BUILDING LAND, WITTON, BIRMINGHAM—Grand Hotel, Birmingham	Mabbett & Edge	do.
*MANUFACTURER'S STOCK OF ELECTRICAL FITTINGS—62A, Aldersgate-street	Frank G. Bowen	do.
*FREEHOLD PROPERTY, ENFIELD—At the Mart	Reynolds & Eason	April 6
*BUILDING MATERIALS—At 22 and 23, Grosvenor-square, W.	White, Berry, & Taylor	April 10
*BRICKWORKS AND BUILDINGS AS GOING CONCERN—Bordon Camp, Hants	R. C. S. Evennett	April 18
*FREEHOLD BUILDING SITE, MILE END-ROAD—At the Mart	S. Walker & Son	April 20
*FREEHOLD BUILDING ESTATE, STRATFORD—At the Mart	Fuller, Horsey, Sons, & Cassell	April 26
*CORNER FREEHOLD BUILDING SITE, WANDSWORTH-ROAD, S.W.—At the Mart	Fuller, Horsey, Sons, & Cassell	do.
*FREEHOLD BUILDING SITE, TOTTENHAM COURT-ROAD—At the Mart	Ventom, Bull, & Cooper	May 4
*RESIDENTIAL ESTATES, RUISLIP PARK, NR. HARROW—At the Mart	Ventom, Bull, & Cooper	do.
*REGISTER OF PROPERTIES	Fuller, Horsey, Sons, & Cassell	No date

SOME RECENT SALES OF PROPERTY: ESTATE EXCHANGE REPORT.

March 14.—By H. J. WAY & SON (at Newport).

Newport, Isle of Wight.—6 and 7, Cross-st., f., y.r. 18*l.* £270
7, Elm-gr., f., e.r. 10*l.* 8*s.* 110

March 15.—By THURGOOD & MARTIN (at Eastbourne).

Eastbourne, Sussex.—6, Marine-parade, f., y.r. 36*l.* 10*s.* 620
8 and 9, Marine-parade, f., y.r. 50*l.* 760
Marine-parade, f.g.r. 8*l.* 1*s.*, reversion in 23 yrs. 395
Marine-rd., f.g.r. 24*l.*, reversion in 77½ yrs. 540
Marine-rd., f.g.r. 8*l.* 5*s.*, reversion in 86 yrs. 210
St. Aubyns-rd., f.g.r. 10*l.* 10*s.*, reversion in 85 yrs. 260
St. Aubyns-rd., f.g.r. 27*l.*, reversion in 93 yrs. 700

By COBBS' (at Maidstone).

West Farleigh, Kent.—"Elmscroft" and 70 acres, f., p. 5,550
East Farleigh, Kent.—"East Kent Plantation," 4 a. 3 r. 25 p., f., p. 275
Hop and woodland, 14 a. 1 r. 5 p., f., p. 700
Hop and pasture land, 17 a. 1 r. 21 p., f., p. 900
Yalding, Kent.—Freehold hop gdn., 10 a. 1 r. 16 p., p. 575

March 19.—By CARTWRIGHT & ETCHES.

Wimbledon.—187 and 189, Merton-rd. (s.), f., y.r. 82*l.* 1,320
Pimlico.—114, Denbigh-st., and 3, Moreton-ter.-mews, u.t. 23 yrs., g.r. 10*l.* 10*s.* y.r. 114*l.* 4*s.* 795
8 to 12, Gray's Inn-pl., u.t. 16¼ yrs., g.r. 12*l.* 10*s.*, w.r. 104*l.* 450

By EASTMAN BROS

Altarnum, Cornwall.—"Treburland Tin Mine," 91 a. 3 r. 5 p., f., y.r. 50*l.* 1,550

By J. HIBBARD & SONS.

Clerkenwell.—6, Percy-sq., u.t. 12¼ yrs., g.r. 3*l.* 10*s.*, w.r. 97*l.* 10*s.* 220

March 20.—By REYNOLDS & EASON.

Islington.—47, Halliford-st., u.t. 39½ yrs., g.r. 7*l.*, e.r. 45*l.* 290

By F. E. WIDDOWSON.

Battersea.—11, Newman-st., u.t. 40½ yrs., g.r. 5*l.*, w.r. 32*l.* 10*s.* 190

By J. S. HOLLAND (at Masons' Hall Tavern).

Hammersmith.—Great Church-la., The "Lord Napier" p.h., u.t. 31 yrs., y.r. 100*l.*, with goodwill 5,500

March 21.—By BAXTER, PAYNE, & LEPPER.

Beckenham.—1, Hayne-rd., u.t. 60 yrs., g.r. 2*l.*, p. 1,700

By BISLEY & SONS and J. H. BULMER.

Rotherhithe.—89 to 113 (odd), Rotherhithe New-rd., u.t. 46½ yrs., g.r. 46*l.*, w.r. 473*l.* 12*s.* 3,430
27 and 29, Hawkstone-rd., u.t. 44½ yrs., g.r. 6*l.*, w.r. 67*l.* 12*s.* 510
63 and 65, Hawkstone-rd., u.t. 44½ yrs., g.r. 6*l.*, w.r. 67*l.* 12*s.* 515
75 and 77, Hawkstone-rd., w.r. 67*l.* 12*s.*; also i.g.r. 3*l.*, u.t. 44½ yrs., g.r. 9*l.* 505
77 and 79, Abbeyfield-rd., u.t. 48½ yrs., g.r. 10*l.*, w.r. 78*l.* 580
52, 54, 56, 64, 66, and 68, Rotherhithe New-rd.; and 1A and 2A, Luxford-st., u.t. 46 yrs., g.r. 24*l.* 7*s.* 6*d.*, w.r. 215*l.* 16*s.* 1,430
22 to 36 (even), Old-rd., u.t. 42½ yrs., g.r. 23*l.* 5*s.*, w.r. 253*l.* 6*s.* 1,865
24, 25, and 26, Manor-la., u.t. 42½ yrs., g.r. 6*l.* 15*s.*, w.r. 72*l.* 16*s.* 560
9 to 17, Reed-st., u.t. 44½ yrs., g.r. 20*l.* 5*s.*, w.r. 210*l.* 12*s.* 1,480
289 to 295 (odd), Lower-rd., u.t. 16½ yrs., g.r. 18*l.*, w.r. 176*l.* 16*s.* 515
10 and 12, St. Helena-rd., u.t. 51 yrs., g.r. 6*l.*, w.r. 63*l.* 14*s.* 410
8 and 10, Union-rd. (s.), u.t. 36½ yrs., g.r. 9*l.*, y.r. 90*l.* 920
30 to 36 (even), Union-rd. (s.), y.r. 144*l.*; also i.g.r. 12*l.* 10*s.*, u.t. 9½ yrs., g.r. 37*l.* 10*s.* 240
2 and 4, Prospect-st., u.t. 56 yrs., g.r. 4*l.*, y.r. 30*l.* 420
126, 128, 144, and 146, Rolls-rd., u.t. 30 yrs., g.r. 10*l.*, w.r. 140*l.* 8*s.* 830
Bermondsey.—39, 41, and 43, Anchor-st., u.t. 31½ yrs., g.r. 12*l.* 15*s.*, w.r. 105*l.* 6*s.* 630
319 to 327 (odd), Lynton-rd., u.t. 31½ yrs., g.r. 18*l.*, w.r. 179*l.* 8*s.* 1,080

By DAVID BURNETT & CO.

Bermondsey.—62 to 66, Grange-walk, area 7,350 ft., f., w.r. 156*l.* 1,200
Pimlico.—24, Denbigh-st., u.t. 31½ yrs., g.r. 8*l.*, y.r. 60*l.* 450

By KNIGHT & CO.

Chelsea.—30, Sydney-st., u.t. 91½ yrs., g.r. 6*l.*, p. 320
Hammersmith.—10, Souldern-rd., and plot of land in rear, u.t. 83 yrs., g.r. 17*l.* 10*s.*, p. 800

By NORTON, TRIST, & GILBERT.

Stoke Newington.—12, Grazebrook-rd., u.t. 58½ yrs., g.r. 4*l.*, e.r. 40*l.* (including mortgage) 300
Rainham Creek, Essex.—Freehold waterside land, with buildings thereon, area 1 a. 3 r. 30 p., p. 2,100

By ALFRED RICHARDS.

Ponders End.—7 to 12, Boundary-cottages, c., e.r. 91*l.* £550

By E. & S. SMITH.

Islington.—53, Colebrooke-row, f., e.r. 65*l.* 695

By DOUGLAS YOUNG & CO.

Battersea.—214, Battersea Park-rd. (s.), u.t. 64 yrs., g.r. 10*l.*, y.r. 46*l.* 340

March 22.—By H. J. BLISS & SONS.

Mile End.—50 to 60 (even), Bridge-st., f., w.r. 129*l.* 7*s.* 1,230
Stepney.—105 to 111 (odd), Duckett-st., f., w.r. 75*l.* 8*s.* 600
Bethnal Green.—112 and 114, Cambridge-rd., f., w.r. 111*l.* 16*s.* 1,200
Dalston.—37, Shrubland-rd., u.t. 36½ yrs., g.r. nil, y.r. 38*l.* 8*s.* 350
86 and 88, Shrubland-rd., u.t. 41 yrs., g.r. 9*l.*, y.r. 76*l.* 650
Crouch End.—17, Middle-la., u.t. 49 yrs., g.r. 3*l.* 10*s.*, e.r. 32*l.* 210

By JESSE W. JONES.

Chingford.—11, Buxton-rd., f., y.r. 32*l.* 345
Wembley, Middx.—22, Chaplin-rd., u.t. 90 yrs., g.r. 5*l.* 10*s.*, e.r. 30*l.* 255

By C. C. & T. MOORE.

Bow.—35, Eglinton-rd., f., w.r. 39*l.* 370
51, 53, and 59, Sutherland-rd., u.t. 64½ yrs., g.r. 14*l.* 5*s.*, w.r. 104*l.* 670
40, Malmesbury-rd., u.t. 66½ yrs., g.r. 4*l.*, w.r. 39*l.* 255
171, Malmesbury-rd., u.t. 45½ yrs., g.r. 4*l.*, y.r. 30*l.* 240
Mile End.—86, Lichfield-rd., u.t. 36½ yrs., g.r. 3*l.* 10*s.*, e.r. 28*l.* 200
4, Gainsborough-rd., u.t. 33½ yrs., g.r. 3*l.* 5*s.*, y.r. 30*l.* 245
18, Bancroft-rd., u.t. 51½ yrs., g.r. 5*l.* 5*s.*, p. 600
Stepney.—39 and 41, Duckett-st., f., w.r. 49*l.* 8*s.* 340
6, 7, 8, 9, 11, and 13, Elsa-st., f., w.r. 144*l.* 6*s.* 1,070
15, 24, 26, and 28, Elsa-st., f., w.r. 106*l.* 12*s.* 735
37 and 39, Eastfield-st., f., w.r. 58*l.* 10*s.* 390
48, Eastfield-st., and 70 and 72, Aston-st., f., w.r. 111*l.* 16*s.* 650
63 to 69 (odd), Duckett-st., f., w.r. 89*l.* 14*s.* 685
Bethnal Green.—Royston-st., i.g.r. 30*l.*, u.t. 17½ yrs., g.r. 15*l.* 135
Ilford.—King Edward-parade, etc., a block of freehold building land, p. 1,600

By NEWBON, EDWARDS, & SHEPHARD.

King's Cross.—19 and 20, Carlsbad-st., u.t. 36 yrs., g.r 12*l.*, w.r. 83*l.* 4*s.* 395
Kilburn.—238, Belsize-rd. (s.), u.t. 43½ yrs., g.r. 1*l.*, y.r. 56*l.* 630
Lee.—11, 17, 18, 20, and 21, Manor-pk., u.t. 53½ yrs., g.r. 27*l.*, e.r. 275*l.* 1,120
Old Ford.—39 and 41, Norman-rd., u.t. 53½ yrs., g.r. 7*l.*, e.r. 70*l.* 4*s.* 400
Upton Park.—65, 67, 69, and 71, Elizabeth-rd., u.t. 82 yrs., g.r. 14*l.*, w.r. 98*l.* 16*s.* 540
Forest Gate.—323, 323A to 341, and 341A (odd), Sherrard-rd., f., e.r. 390*l.* 2,500
Hornsey.—16, Glebe-rd., u.t. 85½ yrs., g.r. 7*l.*, y.r. 45*l.* 405

Contractions used in these lists.—**F.g.r.** for freehold ground-rent; **l.g.r.** for leasehold ground-rent; **i.g.r.** for improved ground-rent; **g.r.** for ground-rent; **r.** for rent; **f.** for freehold; **c.** for copyhold; **l.** for leasehold; **p.** for possession; **e.r.** for estimated rental; **w.r.** for weekly rental; **q.r.** for quarterly rental; **y.r.** for yearly rental; **u.t.** for unexpired term; **p.a.** for per annum; **yrs.** for years; **la.** lane; **st.** for street; **rd.** for road; **sq.** for square; **pl.** for place; **ter.** for terrace; **cres.** for crescent; **av.** for avenue; **gdns.** for gardens; **yd.** for yard; **gr.** for grove; **b.h.** for beerhouse; **p.h.** for public-house; **o.** for offices; **s.** for shops; **ct.** for court.

MEETINGS.

FRIDAY, MARCH 30.

International Congress on School Hygiene.—Preliminary meeting of Second Congress, to be held in the Jehanghir Hall of the University of London, South Kensington. 5 p.m.

SATURDAY, MARCH 31.

Royal Institution.—Professor J. J. Thomson, M.A., on "The Corpuscular Theory of Matter," V. 3 p.m.

Institute of Sanitary Engineers.—Visit to Edmonton Sewage Farm, Mr. G. E. Eachus, Engineer to the Edmonton Urban District Council, to conduct the party.

MONDAY, APRIL 2.

Royal Institute of British Architects.—Messrs. W. Aumonier and A. W. Martyn on "Wood-Carving." 8 p.m.

Society of Engineers.—Mr. Frank Latham, Borough Engineer of Penzance, on "Harbour Exigency Works." 7.30 p.m.

Society of Arts (Cantor Lectures).—Professor Vivian B. Lewes on "Fire, Fire Risks, and Fire Extinction," IV. 8 p.m.

Liverpool Architectural Society, Incorporated.—Annual general meeting.

TUESDAY, APRIL 3.

Royal Institute of British Architects.—Special general meeting to receive formally the Draft Registration Bill and the report and recommendations of the Registration Committee adopted at a meeting on March 29, when it was resolved to adopt the scheme outlined in the report instead of the Draft Registration Bill already published. The following resolutions to be proposed from the chair:—(1) That the report and recommendations of the Registration Committee, dated March 29, 1906, be adopted; (2) that the Council be requested to take the necessary steps to apply to his Majesty the King for a Revised or Supplemental Charter embodying the said report and recommendations, and also as soon as possible to prepare and present a Bill to Parliament to give effect to the same. 8 p.m.

Royal Institution.—Mr. J. E. Marr, M.A., F.R.S., on "The Influence of Geology on Scenery," III. 5 p.m.

Institution of Civil Engineers.—Mr. Cathcart W. Methven on "The Harbours of South Africa." 8 p.m.

WEDNESDAY, APRIL 4.

Institute of Sanitary Engineers, Ltd.—Mr. H. K. G. Bamber on "Manufacture of Portland Cement." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Royal Archæological Institute.—Mr. Montague Sharpe, D.L. Middx., on: "(*a*) The extensive line of British Stakes protecting the ford across the Thames at Brentford; (*b*) did Cæsar cross here? and (*c*) were the Coway Stakes in existence B.C.?" With lantern illustrations. 4 p.m.

Institution of Civil Engineers.—(1) Students' Visit, at 2.30 p.m., to Inspect the Works in Progress at the Rotherhithe Tunnel; (2) Students' Meeting, at 8 p.m.; paper to be read: "Variations in Direction of the Wind, and an Instrument for Determining them Graphically," by Mr. B. F. Beverley.

THURSDAY, APRIL 5.

Civil and Mechanical Engineers' Society (Caxton Hall, late Westminster Town Hall).—Mr. G. D'A. Meynell on "Steam Turbines." 8 p.m.

Royal Institution.—Professor B. Hopkinson, M.A., on "Internal Combustion Engines," with experimental illustrations, III. 5 p.m.

FRIDAY, APRIL 6.

Architectural Association.—Mr. E. Greenop on "Valuations, Compensations, and Light and Air." 7.30 p.m.

Royal Institution.—Mr. W. Bate Hardy, M.A., F.R.S., on "Physical Basis of Life." 9 p.m.

SATURDAY, APRIL 7.

Royal Institution.—Professor J. J. Thomson, M.A., on "The Corpuscular Theory of Matter," VI. 3 p.m.

Edinburgh Architectural Association.—Associates' visit to Cousland Cement Works.

PRICES CURRENT OF MATERIALS.

**** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.		
Hard Stocks	1 7 0	per 1000 alongside, in river.	
Rough Stocks and Grizzles	1 4 0	,, ,,	,,
Picked Stocks for Facings	2 15 0	,,	delivered.
Flettons	1 5 0	,,	at railway depôt.
Bed Wire Cuts	1 11 0	,, ,,	,,
Best Fareham Red	3 12 0	,, ,,	,,
Best Red Pressed Ruabon Facing	5 0 0	,, ,,	,,
Best Blue Pressed Staffordshire	3 15 0	,, ,,	,,
Do. Bullnose	4 0 0	,, ,,	,,
Best Stourbridge Fire Bricks	3 14 0	,, ,,	,,
GLAZED BRICKS.			
Best White and Ivory Glazed Stretchers	12 0 0	,, ,,	,,
Headers	11 0 0	,, ,,	,,
Quoins, Bullnose, and Flats	16 0 0	,, ,,	,,
Double Stretchers	19 0 0	,, ,,	,,
Double Headers	16 0 0	,, ,,	,,
One Side and two Ends	19 0 0	,, ,,	,,
Two Sides and one End	20 0 0	,, ,,	,,
Splays, Chamferred, Squints	20 0 0	,, ,,	,,
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	,, ,,	,,
Quoins, Bullnose, and Flats	14 0 0	,, ,,	,,

BRICKS, &c. (continued).

GLAZED BRICKS (*continued*)—

	£	s.	d.			
Double Stretchers	15	0	0	per 1,000, at railway depôt.		
Double Headers	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays, Chamferred, Squints	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0	,,	less than best.	

	s.	d.		
Thames and Pit Sand	6	9	per yard, delivered.	
Thames Ballast	5	3	,,	,,
Best Portland Cement	24	0	per ton,	,,
Best Ground Blue Lias Lime	19	0	,,	,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.		
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.	
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	,,	,,
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1	,,	,,
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½	,,	,,

	s.	d.		
Ancaster in blocks	1	10	per ft. cube, deld. rly. depôt.	
Beer ,,	1	6	,,	,,
Greenshill ,,	1	10	,,	,,
Darley Dale in blocks	2	4	,,	,,
Red Corsehill ,,	2	2	,,	,,
Closeburn Red Freestone	2	0	,,	,,
Red Mansfield ,,	2	4	,,	,,

YORK STONE—*Robin Hood Quality.*

Scappled random blocks.	2	10	,,	,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super.,	,,
6 in. rubbed two sides ditto, ditto	2	6	,,	,,
3 in. sawn two sides slabs (random sizes)	0	11½	,,	,,
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	,,	,,
1½ in. to 2 in. ditto, ditto	0	6	,,	,,

HARD YORK—

Scappled random blocks.	3	0	per ft. cube,	,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8	per ft. super.,	,,
6 in. rubbed two sides ditto	3	0	,,	,,
3 in. sawn two sides slabs (random sizes)	1	2	,,	,,
in. self-faced random flags	0	5	,,	,,

	s.	d.		
Hopton Wood (Hard Bed) in blocks	2	0	per ft. cube, deld. rly. depôt.	
,, ,, ,, 6 in. sawn both sides landings	2	7	per ft. super. deld. rly. depôt.	
,, ,, ,, 3 in. sawn both sides random slabs	1	0	,,	,,
,, ,, ,, 2 in. do.	0	8½	,,	,,

SLATES.

In. In.	£	s.	d.	
20×10 best blue Bangor	13	2	6	per 1000 of 1200 at r. d.
20×12 ,, ,,	13	17	6	,, ,,
20×10 first quality ,,	13	0	0	,, ,,
20×12 ,, ,,	13	15	0	,, ,,
16×8 ,, ,,	7	5	0	,, ,,
20×10 best blue Portmadoc	12	12	6	,, ,,
16×8 ,, ,,	6	12	6	,, ,,
20×10 best Eureka unfading green	15	17	6	,, ,,
20×12 ,, ,,	18	7	6	,, ,,
18×10 ,, ,,	13	5	0	,, ,,
16×8 ,, ,,	10	5	0	,, ,,
20×10 permanent green	11	12	6	,, ,,
18×10 ,, ,,	9	12	6	,, ,,
16×8 ,, ,,	6	12	6	,, ,,

TILES.

	s.	d.		
Best plain red roofing tiles	42	0	per 1000 at rly. depôt.	
Hip and Valley tiles	3	7	per doz.	,,
Best Broseley tiles	50	0	per 1000	,,
Do. Ornamental tiles	52	6	,,	,,
Hip and Valley tiles	4	0	per doz.	,,
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000	,,
Do. Ornamental do.	60	0	,,	,,
Hip tiles	4	0	per doz.	,,
Valley tiles	3	0	,,	,,
Best Red or Mottled Staffordshire do. (Peakes)	51	9	per 1000	,,
Do. Ornamental do.	54	6	,,	,,
Hip tiles	4	1	per doz.	,,
Valley tiles	3	8	,,	,,
Best "Rosemary" brand plain tiles	48	0	per 1000	,,
Best Ornamental tiles	50	0	,,	,,
Hip tiles	4	0	per doz.	,,
Valley tiles	3	8	,,	,,
Best "Hartshill" brand plain tiles, sand-faced	50	0	per 1000	,,
Do pressed	47	6	,,	,,
Do. Ornamental do.	50	0	,,	,,
Hip tiles	4	0	per doz.	,,
Valley tiles	3	6	,,	,,

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.		£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13	10	0	...	15	0	0
Deals: best 3 by 9	13	0	0	...	14	0	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	0	0	...	12	0	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.			
Deals: seconds	1	0	0	less than best.			
Battens: seconds	0	10	0	,,			
2 in. by 4 in. and 2 in. by 6 in.	9	0	0	...	10	0	0
2 in. by 4½ in. and 2 in. by 5 in.	8	10	0	...	9	10	0
Foreign Sawn Boards—1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.			
¾ in.	1	0	0	,,			

	At per load of 50 ft.						
Fir timber: best middling Danzig or Memel (average specification)	4	10	0	...	5	0	0
Seconds	4	0	0	...	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	...	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	...	3	10	0
Swedish balks	2	10	0	...	3	0	0
Pitch-pine timber (30 ft. average)	3	15	0	...	4	5	0

JOINERS' WOOD.	At per standard. £	s.	d.		£	s.	d.
White Sea: first yellow deals, 3 in. by 11 in.	24	0	0	...	25	0	0
3 in. by 9 in.	22	0	0	...	23	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	...	18	0	0
Second yellow deals, 3 in. by 11 in.	18	10	0	...	20	0	0
,, ,, 3 in. by 9 in.	17	10	0	...	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	...	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	13	10	0	...	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	0	0	...	12	0	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	0	0	...	22	10	0
Do. 3 in. by 9 in.	18	0	0	...	19	10	0
Battens	13	10	0	...	15	0	0
Second yellow deals, 3in. by 11in.	16	0	0	...	17	0	0
Do. 3 in. by 9 in.	14	10	0	...	16	0	0
Battens	11	0	0	...	12	10	0
Third yellow deals, 3 in. by 11 in.	13	0	0	...	14	0	0
Do. 3 in. by 9 in.	12	10	0	...	14	0	0
Battens	10	0	0	...	11	0	0
White Sea and Petersburg—First white deals, 3 in. by 11 in.	14	10	0	...	15	10	0
,, ,, 3 in. by 9 in.	13	10	0	...	14	10	0
Battens	11	0	0	...	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	...	14	10	0
,, ,, 3 in. by 9 in.	12	10	0	...	13	10	0
,, ,, battens	10	0	0	...	11	0	0
Pitch-pine: deals	18	0	0	...	21	0	0
Under 2 in. thick extra	0	10	0	...	1	0	0
Yellow Pine—First, regular sizes	44	0	0	upwards.			
Oddments	32	0	0	,,			
Seconds, regular sizes	33	0	0	,,			
Yellow Pine oddments	28	0	0	,,			
Kauri Pine—Planks, per ft. cube	0	3	6	...	0	5	0
Danzig and Stettin Oak Logs—Large, per ft. cube	0	3	0	...	0	3	6
Small ,, ,,	0	2	6	...	0	2	9
Wainscot Oak Logs, per ft. cube	0	5	6	...	0	6	0
Dry Wainscot Oak, per ft. sup. as inch	0	0	8½	...	0	0	9½
¼ in. do. do	0	0	7	...	—		
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0	0	9	...	0	1	0
Selected, Figury, per ft. super. as inch	0	1	6	...	0	2	6
Dry Walnut, American, per ft. super. as inch	0	0	10	...	0	1	0
Teak, per load	17	0	0	...	22	0	0
American Whitewood Planks, per ft. cube	0	4	0	...	0	5	0

Prepared Flooring, etc.—	Per square.						
1 in. by 7 in. yellow, planed and shot	0	13	6	...	0	17	6
1 in. by 7 in. yellow, planed and matched	0	14	0	...	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	...	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	...	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	...	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	...	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	...	0	13	6
1 in. by 7 in. ,, ,,	0	14	0	...	0	18	0
¾ in. by 7 in. white ,, ,,	0	10	0	...	0	11	6
1 in. by 7 in. ,, ,,	0	12	9	...	0	15	0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £	s.	d.		£	s.	d.
Rolled Steel Joists, ordinary sections	7	0	0	...	7	10	0
Compound Girders, ordinary sections	9	0	0	...	10	0	0
Steel Compound Stanchions	12	0	0	...	13	0	0
Angles, Tees, and Channels, ordinary sections	9	0	0	...	10	0	0
Flitch Plates	9	0	0	...	10	0	0
Cast Iron Columns and Stanchions including ordinary patterns	7	10	0	...	8	10	0

METALS.

	Per ton, in London. £	s.	d.		£	s.	d.
IRON— Common Bars	8	0	0	...	8	10	0
Staffordshire Crown Bars, good merchant quality	8	10	0	...	9	0	0
Staffordshire "Marked Bars"	10	10	0	...	—		
Mild Steel Bars	8	15	0	...	9	0	0
Hoop Iron, basis price	9	5	0	...	9	10	0
,, ,, Galvanised	17	0	0	...	—		

(*And upwards, according to size and gauge.)

Sheet Iron Black—							
Ordinary sizes to 20 g.	9	10	0	...	—		
,, ,, 24 g.	10	10	0	...	—		
,, ,, 26 g.	12	0	0	...	—		
Sheet Iron, Galvanised, flat, ordinary quality—Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	14	0	0	...	—		
Ordinary sizes to 22 g. and 24 g.	14	10	0	...	—		
,, ,, 26 g.	15	0	0	...	—		

METALS (continued).

IRON (*continued*)—	Per ton, in London. £	s.	d.		£	s.	d.
Sheet Iron, Galvanised, flat, best quality—Ordinary sizes to 20 g.	17	0	0	...	—		
,, ,, 22 g. and 24 g.	17	10	0	...	—		
,, ,, 26 g.	19	0	0	...	—		
Galvanised Corrugated Sheets—Ordinary sizes 6 ft. to 8 ft. 20 g.	14	0	0	...	—		
,, ,, 22 g. and 24 g.	14	10	0	...	—		
,, ,, 26 g.	15	15	0	...	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11	10	0	...	—		
Best Soft Steel Sheets, 22 g. & 24 g.	12	10	0	...	—		
,, ,, ,, 26 g.	14	15	0	...	—		
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	9	10	0	...	9	15	0

LEAD, &c.	Per ton, in London. £	s.	d.		£	s.	d.
LEAD—Sheet, English, 3lb. and up.	18	10	0	...	—		
Pipe in coils	19	0	0	...	—		
Soil pipe	21	10	0	...	—		
Compo pipe	21	10	0	...	—		
ZINC—Sheet— Vieille Montagne ton	32	0	0	...	—		
Silesian	31	10	0	...	—		
COPPER— Strong Sheet per lb.	0	1	0	...	—		
Thin ,,	0	1	1	...	—		
Copper nails ,,	0	0	11	...	—		
BRASS— Strong Sheet ,,	0	0	11	...	—		
Thin ,,	0	1	0	...	—		
TIN—English Ingots ,,	0	1	8	...	—		
SOLDER—Plumbers' ,,	0	0	8	...	—		
Tinmen's ,,	0	0	10	...	—		
Blowpipe ,,	0	0	11	...	—		

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d.	per ft. delivered.	
,, fourths	1¾d.	,,	,,
21 oz. thirds	3¼d.	,,	,,
,, fourths	2¼d.	,,	,,
26 oz. thirds	4¼d.	,,	,,
,, fourths	3¼d.	,,	,,
32 oz. thirds	5d.	,,	,,
,, fourths	4¼d.	,,	,,
Fluted Sheet, 15 oz.	3¼d.	,,	,,
,, 21 oz.	4¼d.	,,	,,

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

¼ Hartley's	2d.	per ft. delivered.	
⅛ ,,	2¼d.	,,	,,
⅛ ,,	2¼d.	,,	,,
Figured and Oxford Rolled "Oceanic" Glass, white	4d.	,,	,,
Do. ,, tinted	5¼d.	,,	,,

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	10
,, ,, ,, in barrels	,,	0	1	11
,, ,, ,, in drums	,,	0	2	1
Boiled ,, ,, in pipes	,,	0	2	0
,, ,, ,, in barrels	,,	0	2	1
,, ,, ,, in drums	,,	0	2	3
Turpentine in barrels	,,	0	3	11
,, in drums	,,	0	4	1
Genuine Ground English White Lead	per ton	22	10	0
Red Lead, Dry	,,	21	10	0
Best Linseed Oil Putty	per cwt.	0	7	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	0
Fine Elastic Carriage	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TO CORRESPONDENTS.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BILSTON.—For the installation of a heating apparatus on the low-pressure hot-water system, Stonefield Council School, for the Education Committee. Messrs. Bailey & McConnall, architects, Bridge-street, Walsall:—
Harlow & Sons, Macclesfield* £607

BOURNEMOUTH.—For the erection of a house in Flag Head-road, Canford Cliffs, for Mr. W. Hamilton Thompson. Mr. P. Sturdy, architect, 4, Clarendon-buildings, Bournemouth:—
W. E. Jones & Son £1,938
J. Nichol, Southampton* 1,698

BRESSINGHAM (Norfolk).—For erecting classroom and cloakroom, etc., at school, for Norfolk Education Committee. Quantities by the Building Inspector to the Committee:—
J. H. Mickleburgh, Eagle-street, Newmarket-road, Norwich £315
[Eight tenders were received.]

CARDIFF.—For cooling towers, electrically-driven pumps, pipe work, etc., for Roath Power Station, for the Corporation. Mr. A. Ellis, City Electrical Engineer, The Hayes, Cardiff:—
Balcke & Co., London £2,440 5 0

CENARTH.—For taking down and rebuilding a house, for Mrs. Williams. Messrs. A. O. Evans, Williams, & Evans, architects, Pontypridd:—
A. Seaton ..... £836 | Thomas & Lewis, Newcastle, Emlyn* £583; Rogers & Son 580

ECCLES.—For erecting a public elementary school in Lewis-street, Patricroft, for the Corporation. Mr. J. H. Woodhouse, architect, 100, King-street, Manchester. Quantities by architect:—
R. Carlyle, Seymour-grove, Old Trafford, Manchester‡ £7,308 10
‡ Provisional Sums—Cindering, etc., playgrounds, 91*l.* 5*s.*; asphalting, etc., playgrounds, 378*l.* 10*s.*

GRAVESEND.—For enlargement of the *Gravesend and Dartford Reporter* printing premises, Harmer-street. Messrs. Rayner & Bridgland, Architect, 16, New-road, Gravesend:—
W. Holland, Parrock-street, Gravesend* £298 10

GRIMSBY.—For erecting a sports pavilion in the playing-field, Old Clee, for the Education Committee. Mr. H. C. Scaping, architect, Court-chambers, Grimsby:—
H. Marrows, Garden-street, Grimsby* £467

HARLEY.—For works of sewerage and sewage disposal for Harley, Wentworth, for Rotherham Rural District Council. Mr. J. Platts, Engineer, High-street, Rotherham:—
W. R. Unwin, Ecclesfield* £680 16
[Ten other tenders.]

HARROW.—For making-up about 2,100 ft. of road, 785 ft. of sewer, and 2,000 ft. of storm-water drain. Messrs. Allan & Hoar, surveyors, 283, West End-lane, West Hampstead, N.W.:—

C.W. Killingback & Co.	£3,179 0	T. Tree & Sons	£2,593 16
J. Shelbourne & Co.	3,112 0	R. Ballard, Ltd.	2,577 0
W. Neave & Sons	2,981 0	T. Watson, Jun.	2,334 0
T. Adams	2,957 0	D. R. Paterson	2,169 0
E. Rogers & Co.	2,630 0	S. Atkins	2,155 0
C. Ford	2,622 0	S. Kavanagh & Co.	2,147 0
		A. B. Champniss, Wealdstone*	1,975 10

HOCKLEY (Essex).—For erecting a Wesleyan chapel, for the Trustees. Messrs. Greenhalgh & Brockbank, architects, Bank Chambers, Southend:—

Leany & Co.	£915 0 0	Howard	£792 10 0
Moss	900 0 0	W. H. Grainger	782 16 2
Woodhams	889 0 0	W. & B. H. Davey	782 0 0
Woodhouse	862 10 0	Ruffell	776 0 0
J. Flaxman	845 0 0	R. Elvy & Son	721 0 0
F. & E. Davey	836 0 0	S. Norden, Rochford, Essex*	703 10 0
J. Service	821 19 10		
Whur & Campkin	817 16 0		

HORSFORTH.—For erecting a pumping-station at waterworks, Borehole, Scotland-lane, for the Urban District Council. Mr. E. J. Silcock, engineer, 10, Park-row, Leeds:—

J. Pickard	£866 10 0	J. Newsome Walker, The Green, Horsforth*	£709 0 0
W. Irwin & Co.	859 0 0	E. Cooper Briggs	700 0 0
C. Myers & Son	849 0 0	Smith-Naylor	678 10 0
P. Rhodes	797 0 0		
A. Lambert	788 17 6		
Horner & Maud	779 4 5		
Ruby Bros.	770 0 0		
J. Hudson	713 5 10		

HULL.—For concrete footpaths in Queen-street, Withernsea, and painting of bandstand, shelters, etc., for Withernsea Urban District Council. Mr. J. B. Kirton, Surveyor, Exchange-buildings, Lowgate, Hull:—
P. J. Barnard, Hull* ..... 2s. 1½d. per yard.
Painting Promenade, Shelters, etc.
M. Robinson, Withernsea* £16

IVYBRIDGE.—For erecting a house in Plymouth-road. Mr. W. F. Tollit, architect, Totnes:—
G. B. Andrews, Ivybridge* £622

LEVERINGTON (Isle of Ely).—For erecting new offices, alterations to playgrounds, etc., at Endowed Provided School, for the Education Committee. Mr. H. Farr Simpson, County Surveyor, Club Chambers, Wisbech:—

H. Rands & Son	£215 0	Elworthy & Co., Upwell, near Wisbech*	£189 15
W. Bailey	191 0	J. W. Wilkinson‡	182 10

‡ Received too late.

LINCOLN.—For alterations, etc., to buildings at the rear of the Corporation offices, Silver-street, for the Corporation. Mr. R. A. MacBrair, M.I.C.E., City Surveyor, Lincoln:—

C. Taylor	£561 18 0	W. S. & W. Close	£515 0 0
B. Fanthorpe	523 0 0	J. M. Harrison	493 0 0
Lansdown & Son	520 0 0	Lincoln Co-operative Society*	487 8 7½
W. Wright & Son	519 0 0		

LOANHEAD.—For Loanhead Fever Hospital extension, for the Larswade District Committee of Midlothian County Council. Mr. C. S. S. Johnston, architect, 66, Hanover-street, Edinburgh:—

Mason and Brick Works.

	With Portland Cement Mortar.		With Portland Cement Mortar.
G. Beattie & Sons	£602 10 0	S. Hair	£358 0 0
Gallagher	449 17 0	D. Greig & Co.	348 0 0
Melrose & Thomson	440 4 0	W. Cowie & Son	346 10 0
W. Finlayson	434 0 0	G. & R. Cousin	339 4 10
W. Davie	429 6 4	W. Black & Sons	333 0 0
J. Angus	400 0 0	G. Reid & Son	332 0 0
G. Reid & Son	399 5 6	W. Watson	316 0 0
J. Adam & Co.	385 3 6	W. Gerrard & Sons	311 0 0
Dennis & Co.	380 0 0	N. McLeod & Son, Harrison-road, Edinburgh*	304 7 0
Scott & Brown	373 11 0		
A. Robb	367 0 0		

Carpenter, Joiner, Glazier, and Ironmongery.

	With White Pine Flooring.		With White Pine Flooring
S. Craig	£472 16 6	W. Watson	£403 0 0
D. M. Law & Son	464 12 5	P. Henshelwood	396 10 0
A. Drysdale	452 13 2	Scott & Sons	385 0 0
G. Beattie & Son	433 0 0	G. Hardy & Son	384 11 0
G. Gilmour & Co.	430 17 10	J. & F. Forrest	380 12 0
D. Greig & Son	430 0 0	J. Duncan & Son	380 0 0
G. Clark & Son	423 11 2	W. McNiven & Son	377 15 0
Steven & Stoddart	419 17 6	A. Calder, 13, Barclay-place, Edinburgh*	370 0 0
W. Finlayson	419 6 6		
P. Barton	410 0 0		

Plumber and Sanitary Work.

	Roof—Plumbers' Work and Gasfitter.	Sanitary Work and Drains.	
Burn Bros.	£94 1 7	£279 11 4	£373 12 11
J. Paterson	124 8 1	237 19 7	362 7 8
W. Kay	112 0 0	244 5 5	356 5 5
R. Blackie	81 10 0	228 14 8	310 4 8
T. Hume	84 0 0	209 8 2	293 8 2
Morrison & Co.	76 0 0	208 0 0	284 0 0
J. White & Co.	82 5 0	195 4 0	277 9 0
D. Barrie	75 0 0	201 12 2	276 12 2
J. Macdonald & Son	90 0 0	184 9 1	274 9 1
Patrick, Knox, & Son	71 0 0	194 15 3	265 15 3
R. Little	69 16 5	180 18 8½	250 15 1½
W. Watson & Son, Ltd., Perth*	67 10 0	160 0 0	227 10 0

Plaster and Cement Work.

R. Pattison	£141 8 3	J. A. McLauchlan	£109 13 0
J. Annan	140 17 0	J. Baird & Son	109 0 0
J. Harper & Son	136 0 0	H. Ritchie & Son	104 15 6
J. Cramb	134 0 0	P. F. Cavanagh, Deanpark Meuse, Edinburgh*	102 0 0
Scott & Davie	133 10 0		
J. Walker	133 0 0		
J. Deas	114 17 0		
W. Graham	110 0 0		

Slater Work.

	With Engert & Rolfe's Roofing Felt.		With Engert & Rolfe's Roofing Felt.
J. Baird	£152 2 3	W. Anderson & Son	£109 19 5
T. & A. Taylor	126 7 7	J. Duncan & Son	106 19 0
H. Ritchie & Son	122 7 1	A. Dobson & Son	104 1 7
T. Clapperton	120 0 0	J. Walker	103 13 0
R. Kidd	117 4 8	C. Brand, 146, Overgate, Dundee*	95 11 6
J. Steven	116 4 3		
A. Ogilvy	115 0 0		
Hogg & Marshall	114 0 0		

Painter Work.

	With Pine Flooring.		With Pine Flooring.
T. Hall	£85 0 0	A. Hutton & Son	£49 9 7
G. Dobie & Son	73 0 0	J. Hume	47 17 5
T. Bonnar & Son	63 4 4	P. & J. Gordon	47 6 0½
A. Lothian	61 19 7	J. Cochrane, Gorebridge*	47 0 0
W. Forsyth & Son	57 0 0		

Heating Pipes.

	Low Pressure. Hot Water, Including Lagging.		Extra if New Boiler Required, Including Lagging.
J. Petrie	£76 18 10	....	£46 0 0
Mackenzie & Moncur	64 0 0	....	—
J. Boyd & Son	65 0 0	....	45 10 0
Donaldson & Skene	56 5 0	....	36 0 0
C. Ritchie & Co.	54 0 0	....	—
Dinning & Cooke	49 10 0	....	56 5 0
D. Lowe & Son, Gilmore Park, Edinburgh*	52 0 0	....	36 0 0

LONDON.—For roadmaking, kerbing, paving, etc., Baker's Hill, Clapton, for the Hackney Borough Council. Mr. N. Scorgie, Borough Engineer and Surveyor, Town Hall, Hackney:—

Grounds & Newton	£1,009	7 3
W. Griffiths & Co., Ltd.	954	4 3
Waterhouse & Hanson	951	7 2
T. Adams	943	12 2
G. Porter, 2, Arthur-street, Well-street, Hackney, N.E.*	937	9 9
E. Frost‡	572	1 2

‡ Withdrawn.

LONDON.—For the supply and erection of oak fencing, for the new park at Denmark-hill, for the London County Council:—

J. East	£850 0	W. Stenning & Son	£618 0
B. Horton & Son	720 0	J. Clift & Son	569 0
J. Layley & Sons	665 0	Rowland Bros.	566 17
J. & S. Agate, Ltd.	628 10	R. Batcheller	552 4
J. Stenning & Son, Ltd	625 0	A. Turner & Son	538 0
M. Marshall	620 0	W. Bowen, Halstead, Sevenoaks*	490 0

LONDON.—For plates for side-slot rails for reconstruction of portion of first section of northern tram lines, for the London County Council:—

Frodingham Iron and Steel Company, Ltd.‡	£715 0
P. & W. Maclellan, Ltd.	628 0
Continuous Rail Joint Company, Ltd., London*	523 0
Steel, Peech, & Tozer, Ltd.§	132 10

‡ Not to specification. § Incomplete tender.

LONDON.—For enlarging the boys' playground of the Warple-way school, Wandsworth, for the London County Council:—

Lole & Co.	£746	W. & C. Brown	£525
R. S. Ronald	650	A. Leather	519
E. B. Tucker	623	L. Whitehead & Co., Ltd.	495
Lathey Bros.	620	J. Garrett & Son	595
Maxwell Bros., Ltd.	525	E. Triggs, 92, The Chase, Clapham*	483

LONDON.—For the British Museum Extension. First contract:—

		Allowance for Old Material.
J. Appleby & Sons	£58,289	10
Holliday & Greenwood, Ltd.	53,777	—
J. Thomson & Co.	52,964	68
B. E. Nightingale	49,029	37
W. Lawrence & Son	48,589	—
Martin, Wells, & Co., Ltd.	47,500	—
H. L. Holloway	47,474	50
J. & M. Patrick	47,227	108
Sabey & Son, Ltd.	46,840	—
W. Downs	46,800	30
E. Lawrance & Sons	46,650	25
J. Parnell & Son	46,447	26½
Muirhead, Greig, & Matthews	46,370	—
Spencer, Santo, & Co., Ltd.	45,987	30
Foster & Dicksee	45,945	50
McCormick & Sons	45,885	20
J. Allen & Sons, Ltd.	45,850	—
Patman & Fotheringham, Ltd.	45,823	100
A. Hudson & Co.	45,410	16½
W. S. Shepherd & Co.	45,184	50
Dove Bros., Ltd.	44,895	10
F. Gough & Co.	44,800	30
W. Willett	44,700	21
D. R. Paterson	44,413	57
J. E. Johnson & Son	44,226	38
Leslie & Co., Ltd.	43,988	—
C. Godson & Sons	43,914	50
Killby & Gayford	43,836	20
Higgs & Hill, Ltd.	43,644	20
T. Rowbotham	43,580	100
W. Johnson & Co., Ltd.	43,560	250
T. H. Kingerlee & Sons	43,411	40
Holland & Hannen	42,698	—
J. E. Wallis & Sons, Ltd.	42,340	60
F. & H. F. Higgs	41,600	—
J. Mowlem & Co., Ltd.	40,450	58
J. Smith & Sons, Ltd.	40,150	—
J. Chessum & Sons	39,700	10
Holloway Bros., Ltd.	39,480	—
C. Wall, Ltd.*	37,500	20

MORLEY.—For erecting a rag warehouse, rag grinding place, offices, stables, etc., at Tingley Common, for Mr. D. Banks. Messrs. T. A. Buttery and S. B. Birds, architects, 1, Basinghall-square, Leeds:—

Masons: W. & H. Sykes, Morley	£738 8 7
Joiner: A. Furness, Morley	673 0 0
Plasterer: E. Wilson, Morley	55 0 0
Slater: J. Kellett	77 0 0
Plumber: J. W. Stakes, Morley	83 15 0
Ironfounders: Morley Engineering Co.	125 17 6

MORLEY.—For erecting a rag warehouse at Parkfield Mills, Fountain-street, for Messrs. J. Brumfitt & Son. Messrs. T. A. Buttery and S. B. Birds, architects, Queen-street, Morley:—

Mason: P. Rhodes, Leeds	£847 0
Joiner: A. Furness, Morley	723 0
Plumber: J. W. Stakes, Morley	74 15
Plasterers: S. Idle & Co., Gomersal	31 19
Slaters: Pickles Bros., Leeds	94 10
Ironfounders: Morley Engineering and Pulley Co.	129 10

NANTWICH.—For alterations and additions to school buildings, Broomhall, for County of Chester Administrative Sub-Committee for the Nantwich Union area. Mr. H. Beswick, County Architect, Newgate-street, Chester. Quantities by Architect:—

H. Fairclough	£1,332 10 0	F. Matthews	£969 0 0
T. G. Huxley	1,100 0 0	Lawton & Chesters	886 0 0
T. E. Fenna	1,082 10 0	J. T. Gresty	880 0 0
J. Mayer & Sons	1,025 17 6	S. Manley	857 10 0
Cox & Vaughan	998 0 0	Stretton & Gibson, Audlem*	847 0 0
J. Harding	976 0 0		

NEW WORTLEY.—For erecting a Sunday school, for the trustees of the Primitive Methodist Chapel, Holdforth-street. Messrs. T. A. Buttery & S. B. Birds, architects, Queen-street, Morley:—

Mason: Pullan, Beeston	£1,088 0
Joiner: F. O. Farrall, Leeds	463 0
Plumber: F. L. Armitage, Leeds	119 0
Plasterer: J. Walsh, Armley	202 0
Slater: J. Atkinson & Son, Ltd., Leeds	29 5

STAMFORD.—For erecting buildings at the Town Hall, St. Mary's Hill, for the Town Council. Mr. F. R. Ryman, Borough Engineer, Stamford. Quantities by Engineer:—

—	Bricklayer, Waller, etc.	Carpenter and Joiner.	Slater.	Plumber and Glazier.	Plasterer.	Painter.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Bacon & Son	—	—	—	*103 5 8	—	—
Braithwaite & Co.	—	—	—	93 12 8	—	—
G. Brown	559 11 8	185 8 6	22 18 6	97 15 0	63 14 5	32 6 5
Broadbent & Co.	—	—	23 7 9	—	—	—
H. Corby	—	209 10 0	—	—	—	—
J. Cooper & Son	540 0 0	210 0 0	—	—	—	—
Dawber, Townsley, & Co.	—	—	20 11 6	—	—	—
W. Emerson	541 5 5½	229 8 11½	22 9 3	—	—	—
F. Father & Sons	—	—	—	—	62 14 5	—
J. Foster	—	—	—	—	—	26 18 0
Haikes Bros.	580 9 4	230 6 0	24 19 9	104 12 4	67 0 9	26 4 9
Hare & Son	—	—	—	—	—	19 17 3
Hart & Son	—	—	—	—	—	*14 18 9
W. Harrison	—	—	—	94 10 2	—	—
Hinson & Co.	592 14 6	†205 11 10½	26 1 3	†98 14 2	45 15 0	25 5 2
E. E. Howes	—	†181 13 4	—	—	—	—
Hull & Son	—	—	—	93 0 0	—	—
J. Lucas	472 11 7	187 5 3	25 19 9	105 16 9	† 47 18 1	25 1 5
J. S. Marsden	538 0 0	195 15 0	—	—	—	—
H. W. Munton	—	—	—	102 11 6	—	13 4 5
J. Peasgood	—	200 0 0	—	—	—	—
Roberts Bros.	—	—	—	—	—	‡880 0 0
J. Rouse	676 19 5	—	—	—	—	—
R. Scholes	417 0 0	223 0 0	19 6 0	88 19 4	41 0 0	21 2 0
P. Sibson	—	—	—	—	—	17 15 0
W. Wilson	—	—	—	*88 19 4	—	—

[The tender of Messrs. Roberts Bros. for bricklaying, carpentering, joinery, and slating has been accepted.]

RIDLEY.—For alterations and additions to School Buildings, Ridley, near Tarporley, for the Sub-Committee for the Nantwich Union area. Mr. H. Beswick, County Architect, Newgate-street, Chester. Quantities by Architect:—

J. Mayer & Son	£580 0	Stretton & Gibson, Audlem*	£391 10
T. G. Ruxley	530 0		
Reece Bros.	440 0		

ST. COLUMB MAJOR (Cornwall).—For constructing a new cattle market, for St. Columb Cattle Market Company, Ltd. Mr. Lewis Stevens, surveyor, Newton Abbot, South Devon:—

No. 1 section.—All work except No. 2 section for Ironwork.

H. Bennallack	£1,700 0	Parker Bros.	£1,326 0
W. E. Bennett	1,417 0	J. Colliver	1,292 8

No. 2 Section.—Ironwork.

D. Rowell & Co.	£690 0 0	T. L. Harding & Sons	£489 2 7
J. Colliver	589 4 0	J. Lysaght, Ltd.	476 7 3
Bowlton & Pane	540 4 7	W. J. Powell	462 10 5
W. E. Bennett	531 0 0	Hill & Smith	422 18 10
		W. Gratrix & Sons	338 19 10

Nos. 1 and 2 Sections.—Undivided tender.

W. Wiffen, Holdworthy* £1,632

SALISBURY.—For the addition of a new coffee-room and other alterations to the "White Hart" Hotel, Salisbury. Mr. A. C. Bothams, architect, 32, Chipperlane, Salisbury:—

Mitchell	£986	Day Bros.	£870
Dawkins	957	Wort & Way	820
Kite	956	Musselwhite	809
Vincent & Folland	916	Harris Bros., Fiskerton, Salisbury*	795
Grage & Sons	880		

SCALBY.—For constructing two miles of main sewers, for the Urban District Council. Mr. C. H. Gott, engineer, 8, Charles-street, Bradford:—

T. C. Dill	£3,050 0 0	J. Jaram & Sons	£2,421 0 0
C. Firth	2,840 0 0	J. H. Matthews	2,381 7 0
M. Arundel	2,678 16 0	J. Arundel Exors.	2,340 1 9
Waddington Bros.	2,675 16 5	Kell Bros.	2,310 0 0
Parkin & Co.	2,674 1 6	A. Waddington	2,300 0 0
T. Egan & Sons	2,613 3 0	T. Smith	2,273 8 10
J. Balmforth	2,540 0 0	W. Brigg, Bradford*	2,200 0 0
A. Braithwaite & Co.	2,476 19 5		
Schofield, Sons, & Co., Ltd.	2,426 6 1		

SHENFIELD.—For the erection of country house for the Highland Avenue Building Syndicate from designs by Mr. H. R. Bird, architect and surveyor, Brentwood:—

F. W. Burtwell	£750	E. Dix*	£680
F. W. Jarvis	725		

TAMWORTH.—For erecting a mortuary at the Union workhouse, for the guardians. Mr. J. W. Godderidge, architect, Tamworth:—

H. Clifford	£133 0	Wright Bros.	£124 0
C. Shuttleworth	125 15	E. Williams, Tamworth*	100 7

TORQUAY.—For the erection of stables, coach house, warehouse, cottage, etc., Albert-road, Torquay, for the Torquay Co-operative Society, Ltd. Messrs. Bridgman & Bridgman, architects, of Torquay and Paignton. Quantities by Mr. Vincent Cattermole Brown, of Paignton:—

J. C. & W. Watson	£1,380 0 0	E. Pike	£1,145 11 0
A. E. Brook	1,358 4 11	H. Drew	1,095 0 0
J. Mumford	1,234 8 0	R. W. Wyatt	1,080 0 0
H.C. Jackman	1,200 0 0	Lyle & Son	1,033 13 8
E. P. Bovey	1,198 0 0	R. F. Yeo & Son, Torquay*	974 0 0
R. E. Narracott	1,195 0 0		

TURRIFF (N.B.).—For additions to steading, Glass-jaw. Messrs. J. Duncan & Son, architects, Turriff:—

Masons: P. Christie & Son, Turriff .....
Carpenter: G. Milne, Forgue, Huntly .... } £340 6
Slater: J. Gillespie, Turriff .....

WORKSOP.—For erecting a new bridge over the canal in Kilton-road, for the Urban District Council. Mr. G. Rawson, Surveyor, Worksop:—

W. Craig	£1,379 11 9	G. G. Middleton	£913 0 0
Baker & Sons	1,261 6 0	Ilett & Sons	911 15 0
J. Doncaster	1,023 10 0	Bowles Bros.	820 0 0
A. Chadwick	975 0 0	C. Leverton, Worksop*	815 0 0
G. Wright	920 0 0		

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